DOCUMENT RESUME

ED 316 542 SP 032 178

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TITLE Images of Reflection in Teacher Education.
INSTITUTION Association of Teacher Educators, Reston, Va.
SPONS AGENCY Office of Educational Research and Improvement (ED), Washington, DC.
PUB DATE 88
CONTRACT 400-85-1039
NOTE 58p.; Summaries of papers presented at a National Conference on Reflective Inquiry in Teacher Education (Houston, TX, October 1987).
PUB TYPE Collected Works - General (020) -- Reports - Descriptive (141)

EDRS PRICE MF01/PC03 Plus Postage.
DESCRIPTORS *Cognitive Development; Comprehension; *Curriculum Development; Higher Education; *Metacognition; Preservice Teacher Education; Research Needs; Teacher Attitudes; Teacher Characteristics; Teaching Methods
IDENTIFIERS *Reflective Teaching

ABSTRACT

These papers provide summaries of the most important discussions, conclusions, and issues from papers presented at a conference on reflective inquiry in teacher education. The following areas are covered: (1) new images for reflecting about teacher education; (2) reflecting on reflection in teacher education; (3) research on reflection in teacher education; (4) the classical and modern views of reflection; (5) components of rational practice--planning, implementation, and reflection; (6) an analysis of teacher socialization and the reflective practice; (7) a definitional comparison between theory and practice; (8) preferred characteristics of reflective teacher education; (9) criteria for a framework of the knowledge base in teacher education; (10) meaning and implications of reflective teaching for preservice teacher educators; (11) rethinking the rhetoric of "reflective inquiry" in teacher education programs; (12) promoting teacher reflection through structured dialog; (13) methods for fostering teacher education students' reflective analysis of research on teaching; (14) perspectives on a "teacher as reflective decision maker"; (15) reflective self-assessment in student teachers; (16) development of reflective thinking skills about pedagogy; (17) reflective leadership in school principals; (18) reflective concerns facing classroom teachers; and (19) the potential of reflective practice. There are 120 references. (JD)

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Images of Reflection

in Teacher Education

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IMAGES OF REFLECTION IN TEACHER EDUCATION

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Association of Teacher Educators
Reston, VA

Images of Reflection
in Teacher Education

ERRATA

With apologies for editing errors, the following changes should be made in the Vaughan article:

Page 47

Paragraph 1 - line 3 "top" should be "to"
line 4 eliminate the first "the"
line 6 "in" should be "no"; "to" should be "of"
Paragraph 4 - line 3 "Reasoned vision" should be italicized
line 7 "dedective" should be "deductive"
line 8 "reasoned" should be capitalized
line 9 "Meaningful strategies" should be italicized
line 10 "careful" should be "carefully"; "independent should be "interdependent"
line 13 "process" should be "processes"

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Paragraph 1 - line 5 eliminate the apostrophe from "communities"
line 9 "buildings" should be "building's"
Paragraph 2 - line 1 "writing" should be "writings"
Paragraph 3 - line 3 "development" should be "developed"
Paragraph 4 - The second sentence should begin: "Reflective practice is proactive rather than reactive, emphasizes individual responsibility paired with collegial cooperation rather than individual isolation and competition, ...

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Paragraph 1 - line 2 "intend" should be "intended"
line 20 "design" should be "designs"
Paragraph 2 - line 3 "studies" should be "studied"
Paragraph 3 - line 7 "the" should be "then"

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Library of Congress Catalog Card Number 88-71484

This publication was partially supported through Contract Number #400-85-1039 between the University of Houston, Reflective Inquiry Teacher Education Program and the Department of Education, Office of Educational Research and Improvement. Points of view or opinions stated here, however, do not represent official positions or policy of the United States Department of Education.

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IMAGES OF REFLECTION IN TEACHER EDUCATION

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INTRODUCTION

New Images For Reflecting About Teacher Education

Hersholt C. Waxman
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In October 1987, a national conference on reflective inquiry in teacher education was held in Houston. Invited to the conference were approximately 50 of the leading theorists and practitioners who are exploring reflection in teacher education. Research and practice-oriented papers were developed, analyzed, and critiqued during the conference. This approach to teacher education is receiving considerable national attention now, and needs to be carefully considered by professionals in the field.

The present collection of papers are succinct summaries of the most important discussions, conclusions, and issues from the conference papers. In the first article, Robert Houston sets the stage for examination of the concept of reflection in teacher education. He calls for more sharply focused research on the impact of reflection on the education of teachers. The next article by Grimmett, Riecken, Erickson, and Mackinnon summarizes the research on reflection in teacher education. Their three broad conceptions of reflection illustrate the diversity that characterizes current research on reflection in teacher education. Bitting and Clift follow with a discussion of the classical and modern philosophical view of reflective method and how they contribute to current thinking about reflection in teacher education.

Yinger describes the three typical components of rational practice, (a) planning, (b) implementation, and (c) reflection, but then suggests three different reflection-based notions, the language of (a) improvisation, (b) contemplation, and (c) preparation. Cinnamond and Zimpher examine reflectivity as a function of the school community and discuss the socialization process for preservice teachers. Fellows and Zimpher deal with some of the definitional problems related to the concept of reflection and they also discuss the value of reflectivity. Valli and Taylor argue that adequate teacher education programs should be based on (a) a curriculum approach that incorporates reflection throughout the program, (b) an epistemology that is rigorous, critical, and experience based, (c) problems that are normatively situated, and (d) instructional strategies that link knowledge to action. Valli and Tom propose criteria for a framework they feel can facilitate the improvement of the practice of teaching. They call these criteria the scholarly criterion, multiplicity criterion, relatedness criterion, usefulness criterion, and reflectivity criterion.

Ross provides a comprehensive picture of the goals of teacher educators who want to prepare reflective educators who would then prepare reflective teachers. She proposes that the development of competent reflection depends upon the development of three distinct components: (a) processes involved in reflection, (b) attitudes essential to reflection, and (c) content. Noordhoff and Kleinfeld describe their innovative teacher education program, Teachers for Rural Alaska, and discuss how they have operationalized the concept of reflective inquiry in their program. Pugach and Johnson describe an approach, peer collaboration, that helps teachers develop reflective attitudes and practices. Volker describes two methods, (a) live television transmission from local schools and (b) interactive videotapes that foster teacher education students' reflective analysis of research on teaching. Simmons and Sparks describe a "teacher as reflective decision-maker" process model for teacher supervision and evaluation.

Freiberg and Waxman discuss the use of audio-tape analysis as a vehicle that promotes reflectivity for student teachers. Denton and Peters describe a 15 month teacher education program for post-baccalaureate interns and how these interns developed reflective thinking skills. Hall discusses the concept of strategic sense and how it is a key to reflective leadership in school principals. Moore, Mintz, and Biermann raise several concerns that face classroom teachers as they become more reflective. They argue that accountability as currently practiced in education today restricts teachers from making intramural decisions and prevents them from becoming full partners in the making of educational policy. Finally, Vaughan provides a summary of suggestions and concerns with regard to the current picture and the future of reflection practice in improving schooling. He argues that we need both reasoned vision and meaningful strategies to improve reflective practice.

Appreciation is expressed to the U.S. Department of Education, Office of Educational Research and Improvement for partial funding to sponsor the conference and editorial work on the monograph. We would also like to thank the ATE Communications Committee (chaired by Annabel Sacks) for their critical feedback on earlier drafts of the monograph. We would like to especially thank Lu Lu Harrison for her cooperation and artistry in designing the cover page. Andrew Do and Rizwan Ali were responsible for the typing and preparation of the monograph and their work as always, was exceptional and appreciated. Finally, we must commend the efforts of Bob Houston, who had the vision for this monograph and then provided the support necessary to make it all possible.

REFLECTING ON REFLECTION IN TEACHER EDUCATION

W. Robert Houston
University of Houston

Reflection in education is not a new nor revolutionary concept. Neither is it the only innovation being tested in teacher education. It is, however, a powerful concept that promises stronger preparation for teaching and more effective graduates of such programs. As George Santayana wrote, "Those who forget the past are doomed to repeat it." Putting reflective inquiry in context as an innovation and as an historical thread may be important to its effective implementation.

Educational Innovations

The field of education is strewn with discarded innovations. A review of journals printed in 1958 would find that educators were heralding computer-based instruction as the future replacement of the teacher. They were asserting how important science, mathematics, and foreign language were in America's future. The Russian satellite, Sputnik, had just been launched, and schools were accused of inadequately teaching basic skills. Teachers were criticized for their incompetence, and "teacher-proof" curriculum materials were in their early stage of development by academicians.

Ten years later, in 1968, the latest innovation was systems theory, and competency based teacher education was just being introduced. By 1978, the short-comings of both had been emphasized, and teacher educators were seeking other alternatives. By 1988, more than 300 national and state commission reports from politicians and the lay public had laid bare the shortcomings of America's educational system. The threat now was foreign competition and a major rationale for improved schooling was economic conditions. Again, science, mathematics, and foreign language were important, and schools were expected to emphasize basic skills. Along the way, a plethora of other innovations were also tested and discarded.

It seems that each wave of innovations, each new and fashionable way to improve the education of teachers, just begins to wash across the nation as its successor is heralded. There is inadequate time to test each idea, and insufficient research to study its qualities and strengths.

The most recent conceptualization of improved teacher education includes reflective inquiry. Or inquiry. Or reflection. By whatever name, this notion swept across the 1987 AERA conference, forms the basis for many of the new and innovative educational programs, and is perhaps the most written about single idea today. Will it last? What are its roots? And, is reflective inquiry simply new wine in old wineskins?

An Ancient Concept

The concept of reflection is an ancient one. The elders and prophets of old were revered for their wisdom and counsel. That wisdom was based on knowledge, but more importantly, on the ability to analyze situations, to recognize the nuances of problems, to be able to think divergently, and to propose solutions to problems that plagued the people.

About the sixth century B.C., a wave of philosophers, scientists, and religious leaders independently and in all parts of the planet, proposed reflective ideas and taught about new ways of thinking that continue to shape thought and action to this day. In Greece, these reflective inquirers included Plato and Aristotle; in China, Confucius and Lao Tzu, in the middle east, Solomon; and in India, Gautama the Buddha. They exemplified different conceptions of reflection but all are revered for the lasting strength of their ideas.

About two thousand years later, in Europe, men like Frances Bacon, Rene Decartes, Isaac Newton, Immanuel Kant, and John Locke employed reflection as they contributed to philosophy, religion, education, physics, and mathematics. Alfred North Whitehead and John Dewey translated a western conception of reflection into the human enterprise, including teaching.

When one begins to put reflection in perspective -- to recognize that reflection can have an Eastern, reflective edge as well as the Western scientific approach; to recognize its long and distinguished history and that the great men and women of the past reflected on their actions and on their own being; to understand that it has been used in teaching, but also to grasp at the essential elements of humankind; to recognize that it is not a method or a technique, but a way of life -- then one begins to sense the lack of power and the paucity of thought that has too often gone into the conceptionalizations of many of the teacher preparation programs being heralded today. One begins, too, to understand why many will (and should) fade in a short time.

Lasting Influence?

Is reflective inquiry to be taken seriously? We who are attempting to develop teacher education and teaching programs based on the notion are concerned that it could receive only superficial treatment. Too little is being invested in examining the concept and the reality. Too few people are really concerned with thinking skills, the keystone of reflection. Teacher educators, pragmatic legislatures, some business leaders, and other educators seeking measureable results from standardized tests with the best of intentions, are too frequently overlooking the opportunities for and the potential of reflection. While there have been some enlightened proposals for increased emphasis on higher-order thinking and reflective inquiry, we have not moved far enough in testing the waters.

Reflective inquiry has yet to be tested adequately in teacher education. The more contemplative Eastern notion of reflection has yet to be tested at all. Reflection implies more than the scientific method, more than Western rationalism. Its power in preparing teachers is in the breadth of approaches and the range of areas in which it can be implemented.

We need to sharpen our perception of reflective inquiry and the ways it can be implemented successfully and tested in our own programs. To do so, we must use its concepts, skills, and values. We can:

- Reflect on our actions as teachers, and modify subsequent actions as a result.
- Demand that our students probe for deeper meanings in their reading, their study, and their actions.
- Press for sharply focused research on the impact of reflection in educating teachers, particularly in developing thinking skills of their students.
- Study broadly the concept of reflection in both the Eastern as well as the Western traditions, and seek to translate the relevant aspects of such study into viable actions.
- Act on reflection; without action, reflection leads nowhere.
- Remember that reflection is developed through use; that it grows, strengthens, and matures as it is employed.

The concept of reflective inquiry will continue to be part of teacher education. Its roots are deep in the psyche of Americans. Its roots are bound up in the traditions of education. Whether we view it favorably or unfavorably, John Dewey's impact on the American school has been so great that his basic concept of reflection, the one upon which most are designed today, will continue to influence teacher education and schools. The challenge is to improve upon these early visions, and to create other visions which will form a powerful framework for improving the education of teachers and the practice of teaching.

SUMMARY OF A REVIEW OF RESEARCH ON REFLECTION IN TEACHER EDUCATION

Peter P. Grimmett **Theodore J. Riecken**
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Three broad conceptions of reflection appear to be at work in the research that is available for review. One draws heavily on Schon's (1983, 1987) conception of problem setting and re-framing within the context of the paradox of learning. A second sees reflection as a technique for enhancing teaching and teaching for thinking. A third appears to go beyond Schon's conception to draw on Van Manen's (1977, 1987) phenomenological conception of reflectivity as it pertains to teachers' practical knowledge and "critical" teacher empowerment.

Schon's Conception of Reflection

Schon (1983) argues that the knowledge-in-action of practitioners is to be found in the professional actions of practitioners and their reflection on and in such actions rather than in a particular kind of theoretical thinking, "technical rationality", as he terms it. In so doing, he refutes the idea that a science-like corpus of propositional knowledge can drive practice, and that it can lead to unwarranted predictability and control in practical affairs. Schon's quest for professional knowledge-in-action revolves around a search for "an epistemology of practice implicit in the artistic, intuitive processes which some practitioners do bring to situations of uncertainty, instability, uniqueness, and value conflict". Schon argues that professional knowledge is constructed by practitioners through reflection-in-action (i.e., an action is generated and tested through "on-the-spot experimenting") and reflection-on-action (i.e., an action planned on the basis of post-hoc thinking and deliberation). Both types of reflection involve some form of experimentation in which practitioners attempt to create meaning of the problematic aspects of a practice situation through "problem setting" and "problem solving". One of the ways practitioners engage in problem setting and problem solving is by thinking metaphorically. That is, as practitioners set and solve problems, they draw upon past experiences and theoretic knowledge to "reframe" the problem in ways that make sense to them. Schon calls this type of reflection, "seeing-as".

Studies in the Schon Genre

Schonian based research described in this section includes six sets of studies: studies looking at metaphors and teachers' professional knowledge, teachers' developmental thinking, teachers practical arguments, constructivist science teaching, collaborative action research, and teachers improvisation. Using Schon's conception of reflection as "seeing-as", Munby (1987a, 1987b) is examining the role of metaphors in teachers' language of practice. Initial findings from Munby's work support Schon's claim that the dominant "technical rational" approach to professional education is a less than adequate means for educating practitioners. Russell (1987) reports similar findings in his studies of how beginning and experienced teachers view the relationship between theory and practice as learned on the job and in preservice education.

In the area of teachers' developmental thinking, Grimmett (1984, 1987) and Grimmett and Crehan (1987) have looked at the supervision conference as a setting for reflection. They examined what it is that participants do together in a supervisory conference that enables a re-framing of a problem situation to lead to on-the-spot experimentation in their thoughts, and in the subsequent experimental behavior of the teacher in the classroom. They found that a crucial factor in a reflective framing and re-framing of a problem was the conceptual complexity (Harvey et al., 1961; Schroder et al., 1967) of both the teacher and the supervisor.

Working at the preservice level, MacKinnon (1986, 1987a, 1987b) developed a set

of criteria for detecting reflection-in-action among student teachers involved in a supervisory conference. Using this scheme, MacKinnon distinguished between "acts of reflection" and "acts of rationalization" in which moves were undertaken to justify or defend a particular teaching behavior. Acts of reflection were seen as distinct from acts of rationalization in that they involved the student teachers in experimentally playing out the implications of various theoretical perspectives that can be used to guide teaching. A somewhat similar focus to the study of reflection is found in Fenstermacher's (1986) and Morine-Dershimer's (1987) work on teachers' practical arguments. Fenstermacher (1986) describes a practical argument as culminating in an action and containing at least one instance of each of three types of premises: a situational premise that served to define the situation, an empirical premise that stated an if-then relationship that applied in that situation, and a value premise that stated a desired condition associated with that situation.

Focussing not on the premises of the teachers' practical arguments, but on the prior conceptions of current experience in students' existing knowledge, Erickson (1987) explores the ways in which science teachers can take into account students' existing knowledge and utilize this knowledge in a meaningful way in their instructional program. Erickson draws upon Schon's epistemology of practice in which professional knowledge is viewed as being constructed through the gradual development of a repertoire of exemplars which have been tested through reflection-in-action. Another form of research that has a focus on reflection similar to that of Schon's conception is action research. In a recent review of the literature on collaborative action research, Noffke and Zeichner (1987) describe the role of action research in teacher self-reflection. They conclude that much of the action research currently being done does foster teacher self-reflection. A different approach to reflection is that advanced by Yinger (1987). Yinger argues that much of the activity associated with teaching requires on-the-spot decision making and does not allow for deliberative or contemplative kinds of thought. What Yinger suggests as an alternative, is a notion of "improvisation" in which teachers draw upon past experiences and tacit knowledge as they formulate on-the-spot action in teaching situations.

Reflection as Technique

Some of the current research sees reflection as a useful technique that can be learned by preservice teachers as part of their professional education. Work of this type is best exemplified by Hoover (1987), Ross (1987) and Weade (1987). This approach aims to teach students an approach that is grounded first in classroom study and secondly in the application of a specific theory to situations of practice "through reflection". This approach does not appear to incorporate the conjunction of theory and practice that Schon describes as essential components of professional knowing-in-action.

Van Manen's Perspective

The third major conception of reflection found in the educational literature is Van Manens' (1977) notion of the "levels of reflectivity" and the "self-reflectivity" of life (1987). Van Manen's conception of reflection is often used by those concerned with teacher empowerment and phenomenological approaches to the study of education. Researchers working in this area include Goodman (1986, 1987), Hultgren (1987), and the critical action research of Carr and Kemmis (1983). An approach similar to Van Manen's phenomenological work on reflection is the recent work on teachers' practical knowledge by Elbaz (1981, 1983), Clandinin (1986, 1987), and Connelly and Clandinin (1984, 1985). Using a phenomenological approach, these researchers have explored the ways in which teachers construct the meanings and knowledge that guide their actions in the classroom.

Conclusion

This series of brief descriptions is illustrative of the rich diversity that characterizes the current investigations into reflection in teacher education. The majority of the studies draw upon either a Schonian, instrumentalist, or phenomenological conception of reflection. Though there is some overlap in these categories, particularly between the Schonian and some elements of the phenomenological, the tripartite framework has provided a useful scheme for this initial review of the research literature.

REFLECTION UPON REFLECTION: THE CLASSICAL AND MODERN VIEWS

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Renee T. Clift
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We view reflection as an activity which never reaches its ultimate goal and is not content with temporary gains. We argue that reflective thought is a special kind of mental activity, distinguishable from other kinds of mental activity such as daydreams, recognition, or imaging and can, therefore, be described as a particular kind of process. We also argue that a description cannot be isolated from the normative question of what reflective inquiry *ought* to be. Thus, our description is not so much a method actually followed by ourselves or anyone else, as a goal we are attempting to achieve, even if we never entirely succeed. Toward this end we will give an account of the reflective method that satisfies two conditions:

1. The method is not ignorant of what methods have been used by previous reflective inquirers, and;
2. All such historical precedents are simply preliminaries to the central question. The final appeal is to current experiences of reflective work and our awareness of that which we are engaged in as we attempt to follow principles of reflective activity.

In this abstract we discuss four philosophers, Socrates, Plato, Descartes, and Kant and their contributions to the theory of reflective method by describing the methods they claimed to be using or recommended for use by others.

The Classical View: Socrates and Plato

The existence of the coord dialectic, which stands for an important group of methodological conceptions, owes its origin to Socrates' technique of reflective discussion. This use of "dialectic" is not to be confused with the Marxist claim that the dialectical process which occurs in thought mirrors the same process in the material world, but rather as a dialogue between opposing positions. Reflective thought is developed through a sustained pattern of argument in which the opposing positions are drawn out, hopefully promoting deeper insight into the original problem.

According to Socrates, knowledge was to be sought within the mind and brought to birth by questioning (Meno, 82a-86d). He contrasts *perceiving*, or the observation of things outside oneself, with *reflection*, the discovery of what is within, an activity he held to be common to both mathematics and ethics. Socrates advocated reflection as opposed to observation, an activity dependent upon a principle that is important to any theory of reflective method: what we are trying to do is not to discover something of which until now we have been ignorant, but to know better something which in some sense we know already; to know it better in the sense of coming to know it in a different and better way.

Plato further argued that dialectic and mathematics differ in method to the extent that in mathematics the mind goes from hypothesis to a conclusion, whereas in dialectic it goes from hypothesis to a non-hypothetical principle (Republic, 509d-510d). In the dialectic, hypotheses serve as stepping stones to reach something that is a principle of everything. Thus we cannot only draw on the consequences of our hypothesis, but we are aware that we can cancel the hypothesis at any time or we can assume the opposite and see what follows (Republic, 533c-533e). Thus reflection is the one sphere in which thought moves with perfect freedom, bound by no limitations except those which it imposes upon itself for the duration of a single argument.

The Modern View: Descartes and Kant

Socrates and Descartes both focused on the discovery of a method that sought to end a period of division and doubt concerning the nature of knowledge through a study of what passed for knowledge in their own time. Both distinguished observation from thought, and both found a clue to this method through an understanding of the principles of mathematics. Descartes insisted, however, that nothing was to be accepted unless known on evidence to be true. Further, every subject matter was to be divided into the smallest possible parts and each part was to be dealt with separately and considered in its right order, with no part being omitted in reviewing the whole. He intended to extend these rules to the whole field of scientific knowledge, an attempt that Kant would see as benefitting some fields of study more than others.

Kant's *Critique of Pure Reason* was not precisely a criticism, but a critical analysis. He hoped to show the possibility of analytic reasoning and to exalt it above impure knowledge that comes to us through sensory channels. Kant argued that knowledge is independent of all sense experience and is inherent in the nature and the categorical structure of the mind. Experience, he argued, tells us what is, but not that it must necessarily *be* what it is and not otherwise. Thus experience alone never gives us any general truths and our reason is roused by experience rather than satisfied.

For Kant, the mind was not a passive tablet upon which experience and sensation wrote their absolute will, it was an active organ that molded and coordinated sensations into ideas, thus transforming experiential chaos into the ordered unity of thought. To study the inherent structure of the mind was a problem that transcended experience, "I call this knowledge transcendental, which is occupied not so much with objects as with our *a'priori* concepts of objects" (p. 10). The first stage of this process was the coordination of sensations by applying them to the forms of perception--space and time; the second stage was the coordination of perceptions so developed by applying them to the forms of conception--the "categories" of thought. The world, then, had order not of itself, but because the reflection that knows the world imposed an ordering, the first stage in the classification of experience, which in the final stage becomes science and philosophy. The laws of thought were also the laws of things, for things are known to us only through this thought which must obey these laws, since it and they were one.

The Reflective Method and the Education of Teachers

If knowledge is different from experience, then as teacher educators we face a formidable task in convincing our students that this is so. Follow up studies of teacher education graduates (e.g., Hummel & Strom, 1987) indicate that for most novice teachers, knowledge is inseparable from experience, that teacher education is considered a failure when it fails to produce meaningful experiences from which teachers may learn. We must explore this, not only with our students, but with one another and within ourselves. A commitment to educating reflective teachers involves a commitment to the joint exploration of the teaching experiences and coming to understand them in new and different ways.

The philosophers discussed above were accorded the luxury of thinking about thinking as the endpoint of the professional endeavor. Teachers--and teacher educators--are obligated to consider both thought and action. The impetus toward reflective inquiry cannot ignore the ethical or the practical relationships between thought and action. The normative question of what the reflective process ought to be must be extended to include consideration of the proper outcomes of such a process. Thus, in order to develop a contemporary theory of reflective thought we cannot ignore the principles nor rely on them exclusively. Rather we must maintain a dynamic perspective that incorporates both the demands of the present with the wisdom of the past.

THE INTELLIGENCE OF PRACTICE

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The intelligence of practice is based on an ability to fit tool and method to specific needs and problems with specific people and places. The essence of practice is work-in-place. The conversation of practice is made possible by preparation, improvisation, and contemplation.

Practical action can be most simply divided into aspects of performance and aspects of consideration. Performance refers to the doing, the enacting, the accomplishment of practical action. Consideration is the careful thought and attention directed toward past and future performance conducted apart from the immediacy and demands of actual performance. To consider is to observe, to examine, and to think about in order to understand or decide. Part of the Latin root for consider, *sideris*, meaning star, suggests that consideration, like astronomy, is conducted at a distance from the phenomena of interest.

The methods of practice embodied in the prescriptive language of modern practice are planning, implementation, and reflection. Sound practice, in this framework, involves the careful alignment of goals and means in a design, action conforming to the design, and thoughtful analysis and evaluation of the outcomes. To the degree that practice follows this framework it is "rational"; failures and departures from this framework are considered undesirable or even unreasonable.

Planning, implementation, and reflection have each been identified closely with an analytic, means-ends formulation of thought. Early in this century thinking in general was portrayed in this process framework. John Dewey (1933) went so far as to state that worthwhile thought is reflective thought, thereby identifying thinking with an analytic process guided by a hypothesis testing mode of problem solving. For Dewey, thinking dealt necessarily with the problematic and proceeded by means of analysis and testing.

As an outgrowth of general formulations like Dewey's, planning and reflection were described using similar rational frameworks. The rational planning model developed in economics and adopted widely by professionals, researchers, and educators incorporated four basic steps: careful specification of goals (usually in operational terms); the generation of possible alternatives; the assignment of outcomes to each alternative; and the selection of the "best" alternative in light of outcomes and goals (See Yinger, 1977, 1980 for a description and critique of the use of this model in education).

Reflection as a process has been described in a similar manner. A reflective experience, according to Dewey, includes the following general features:

(i) perplexity, confusion, doubt, due to the fact that one is implicated in an incomplete situation whose character is not yet fully determined; (ii) a conjectural anticipation-- a tentative interpretation of the given elements, attributing to them a tendency to effect certain consequences; (iii) a careful survey (examination, inspection, exploration, analysis) of all attainable consideration[s] which will define and clarify the problem at hand; (iv) a consequent elaboration of the tentative hypothesis to make it more precise and more consistent, because [of its] squaring with a wider range of facts; (v) taking one['s] stand upon the projected hypothesis as a plan of action which is applied to the existing state of affairs: doing something overtly to bring about the anticipated result, and thereby testing the hypothesis (Dewey, 1944, p. 150).

The third component of rational practice, implementation, has been considered mainly in terms of fidelity. Implementation is thought effective to the degree it adheres to

the plan and accomplishes the goal. Reflection is the process by which success of planning and action are tracked and assessed. Reflection is the link between past action and future action by supplying information about operations and outcomes. By viewing practice through these three processes, every action becomes problematic and thus amenable to rational attack.

There is an alternative language of performance and consideration to that of planning, implementation, and reflection. But it appears to be quite different from typical notions of practice. In this language, analysis gives way to "instinct"; the work itself seems to carry the practitioner along. This is the language of improvisation, contemplation, and preparation.

Improvisation is skilled performance that is especially sensitive to moment and place. The impromptu, responsive nature of improvisation has generated connotations of being unprepared and off guard. The reality of improvisational performance is quite different. It is highly patterned, intelligently composed, and quite complex to learn. In a review of improvisation in music, oral poetry, theater, conversation, and traditional work (Yinger, 1987, April), I have generated the following propositions regarding improvisational performance: *(1) Improvisation is a form of action especially suited to situations that discourage or prevent deliberative processes such as planning, analysis, and reflection, (2) Improvisation is a compositional process using as building blocks a set of situationally (contextually) grounded patterns for thought and action, (3) These patterns are holistic configurations of "embodied thought", called upon to be composed and enacted (lived) within the special constraints of the context, (4) The working method of improvisation is primarily "retrospective", using patterns from past action to order future action, (5) Skillful improvisation is based on the incorporation of patterns and pathways in a way that is continually responsive to changing exigencies and purposes, (6) Improvisational patterns are structured by action and include constellations of knowledge, beliefs, and goals, (7) Improvisation skill is synthetic and compositional, not analytic, and (8) Improvisation is primarily directed toward the establishment and maintenance of relationship: between actor and material between actor and instrument (tool), between actor and other participants.*

Descriptions of improvisation as a performance language for practice have been most fully developed in the performance arts of music, theater, and oral poetry. As an example of improvisation in a practical art, I have been studying the classroom interaction of an eighth grade algebra teacher, Bob Knight (See Yinger, 1987, April, for a fuller account of this research). Mr. Knight's method of teaching involved the use of patterns within patterns (Alexander, Ishikawa, and Silverstein, 1977). Math problems provided the basic patterns of meaning and action. Problems were embedded in the larger patterns of lesson activity cycles and unit lesson cycles. Working the other direction, problems provided the contexts for teaching and learning, the academic task structure (Erickson, 1982), and the focus of the instructional conversation. Like all conversations, action in these instructional frameworks was accomplished by local improvisation. The performances of the participants were composed on the spot by using knowledge and interaction patterns bounded by social participation structures such as *working together, demonstration,* and *working alone.*

The teacher was cast as an actor in a three-way conversation between teacher, students, and problems. The teacher's action along the Teacher-Problem pathway was composed by calling up knowledge and procedures holistically associated with particular problem types. These patterns manifested themselves in the written production of the solution steps and the teacher's talk associated with them. Action along the Teacher-Student conversation pathway was composed of a number of recurring patterns. *Thinking aloud, explicating knowledge,* and *debugging mistakes* were used to make the teacher's interaction with the problem more public. *Getting to specifics* and

decomposing/rebuilding problems were patterns used to work from the basis of the students' previous interaction with problems.

For any one problem, for any specific instructional conversation, these patterns were composed on the spot as part of the teacher's performance. At times *demonstration* was the conversation in a Lesson Presentation or Homework Check, at other times it was *working together;* sometimes they appeared in the same lesson. Within these conversational types, the various strategy patterns would be used. The composing of lessons while doing them seems to have been built on the same kind of situational similarity recognition mechanism directing the interaction with specific problems.

To the extent that action is improvisational, the instructional conversations and the strategy patterns of teaching can be described only generally. They constitute action pathways with a general orientation and purpose. Interaction within the [illegible] is reactive and responsive; thought and action is adapted to the [illegible] of social interaction and conversation. Whereas improvisation provides an alternative performance language for practice, the notions of contemplation and preparation supply an alternative language for consideration. Reflection and planning, as described earlier, are focused by goals and driven by analysis and evaluation. Contemplation and preparation describe a different relation to the work.

To contemplate something is to look at and think about it attentively and intently. Contemplation implies observation and thinking in a separate, protected, or holy place -- a place occupying a particular relationship to a larger community and cultural order. Contemplation is based on a close relationship to practice. It is a way of being in the work even when it is not being performed. Reflection is eyesight looking down from without. Contemplation is looking up and out from traditional familiarity and use, out of "a place marked out." The reflective mind, in modern terms, is focused and cooly analytic. The contemplative mind, to paraphrase Denise Levertov, uses the heat of feelings to warm the intellect. Contemplation, in contrast to focused deliberation, allows the mind to roam widely over the terrain of practice. Current states of affairs are considered for their possibilities. Possibilities are considered in light of practice in place.

Reflection, according to Dewey, allows the practitioner to rise above tradition, authority, and circumstance by analysis and evaluation (the considerative criteria being "pragmatic", "utilitarian", and "instrumental"). Contemplation suggests that tradition, authority, and circumstance should be the starting point for consideration, though not the complete definition. Considering common ground becomes the basis for considering new ground. Contemplation is a generalist's stance--considering holistically in terms of order, balance, harmony, and symmetry and resisting the lure of autonomy and control. Contemplation is a language of conservation and stewardship.

Preparation, like planning, addresses the conversation of practice to the future. The nature of this conversation, however, is quite different. Planning, on the one hand, results in some framework for future action, a plan. The range of possibility is prescribed, choices are made about parameters for action, the future is narrowed. Planning seeks to deal with uncertainty by controlling action and outcomes. The goal is to constrain the unpredictable, the random, and the wild. On the other hand, preparation acknowledges our limited ability to predict and the constructive nature of life. Preparation expects diversity, surprise, the random, and the wild. The work of preparing is getting ready, becoming equipped, and becoming receptive. The focus of preparation is on oneself not on a framework to constrain possibility. In a sense, preparation enlarges the future.

To reject planning in favor of preparation is not to reject the future or a consideration of it. It is a stance, an attitude toward ones relation to the work and to the world. Planning takes the side of rationality and control. Preparation leans toward participation and responsiveness. Every practitioner will both plan and prepare, implement and improvise, reflect and contemplate. The differential stock put in these activities reflects one's relational stance. In the conversation of practice, planning, implementation, and analytic reflection influence a pull away from thought-in-place. Improvisation, contemplation, and preparation draw toward it.

REFLECTIVITY AS A FUNCTION OF COMMUNITY: AN ANALYSIS OF TEACHER SOCIALIZATION AND THE REFLECTIVE PROCESS

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Much of the literature on reflection in teacher education has focused on its impact in training the student teacher. A review of recent literature on teacher education has revealed a particular orientation towards reflection. The work of Korthagen (1985), Ross and Hannay (1986) and Zeichner and Liston (1986) indicate views of reflection that show reflectivity as a rather technical, linear, and highly individuated process. When the education community proceduralized Dewey's reflective inquiry (1933) as an organizing theme for change, it limited itself to instrumentalism and the individuation of the teacher (Beyer, 1979, 1984). This normative conception of self reflective pre-service teachers does not allow for the conditions of understanding the interactional educational process that occurs. Blum and McHugh (1984) note that self reflection is a way to orient one's self to the normative order of the practitioner . Our purpose in this analysis is to point out that we would be better informed as teacher educators if we had a view of reflection that is more social.

A dialogic reflection based on G.H. Mead's work attends to the growth of community(ies) and the processes of interaction in such a manner that the processes of reflection and discourse are already incorporated in the development of the communities of the school and the individual student teacher. Joas (1985) notes that for Mead reflection does not have a value in and of itself. Its value lies in its potential for dealing with the next action or interaction. Reflection does not occupy a separate place in the social process but is already embedded in it. As a result, Mead does not have to go to a separate theory to generate a process or reason for reflection; reflection is inherent in the lived experience.

In *Mind, Self, and Society*, Mead (1934) describes the process of the development of the mind, self and society. This is a continual process of construction and an internalization of the social into the self. The self, for Mead, is constructed of two parts: the "I" and the "me." This is not a static moment or process. The self arises out of social behavior and all social behavior involves communication. The self is always preceded by the other. The Generalized Other is the attitudes, the behaviors, the values, and the orientations of the whole community and it is maintained and communicated with significant gestures, including language (Mead, 1934). It is only because of the Generalized Other that thinking or creative reflection can occur. The ability to communicate is the crucial issue for the development of the self and social groups. The self becomes unified through social activity and as a result it can not maintain itself as an individuated self. Knowledge of the self and other is located and maintained in interactions (Blum & McHugh, 1984). The self is always linked to the social communities which help to give it definition through the interactive processes.

Reality has the power of an authority because of the social history that is maintains through the Generalized Other. Before action, the Generalized Other is invoked by the "I" which begins a dialogue between the "I" and the particular community. The self of the student teacher is constructed through role taking and becomes an important mode of self-reflection and self-criticism (Mead, 1934). Social control depends on the degree to which the individual in a community has internalized the attitudes of the others who are involved in a common endeavor. Blum and McHugh state that the "self and other are not truly or essentially different because each is a part of common knowledge as communal orientation" (1984). Student teachers must consult and organize the Generalized Other of the

supervising teacher, university professors, university supervisors and pupils as well as their own knowledge of what a teacher is, based on their own experience as students before they can move on to the next action.

One aspect of Mead's work includes the development of the human social ideal. The ideal community (1934) requires that each individual be a participant in the society. Each of the members has the responsibility to communicate and share with the community new ideas or conceptions identified through reflection. Because language and its meanings are socially derived, reflection is not the property of the individual but is communal.

Through the medium of language, and other significant gestures, a pre-service teacher becomes socialized to the appropriate actions and interaction for the communities of which s/he is a member. When a pre-service teacher's actions entail mixing with other social groups, i.e., students, supervising teachers, administrators, parents, and university professors and supervisors, and dissonance occurs, or an action is impeded, a self reflection is stimulated; discourse with the other participants of the particular interaction is a necessity for the most appropriate and responsible understanding to occur before further action is warranted. Student teachers assume sharable values and understood meanings of the communities of students and teachers as they begin their reflections upon an experience. This matrix is played out across all social groups that interact through members' activities. For the purposes of interaction, and reflection, one must continually communicate with others to unify the principles of the communities involved. This points toward a student teacher who cannot be a spectator and cannot assume s/he sees the world objectively. Thus the question becomes, does the teacher educator literature call for dialogue with all the social groups in the school as a part of the reflective process, or is the reflection limited to the individuated student teacher.

Reflectivity without discourse maintains a teacher dominated social interaction. The approach suggested here is for a type of interaction that values the meanings and individual worth of the dialogue of all participants. Interaction acts as a text that can be used for critical reflection to generate other possibilities for change or for the creation of entirely new possibilities through discourse. In this community, communication would create conditions for the possibility of change for those social groups involved in the institution of the school. An individuated student teacher, reflecting on a particular experience, who then makes changes of practice, is no less authoritarian or instrumental than an unreflective student teacher. The commitment to discourse and processes of interaction is a significant contribution of Mead toward the goal of the reflective student teacher. An isolated, reflective teacher is unable to fully grasp the power of any reflections without discourse because s/he is creating an artificial distance from those about whom s/he is reflecting. The power of reflection is that it is an instance of social action and it must be understood as being grounded in the everyday life world. The source of the authority becomes the communities that work together through dialogue to construct shared values, and expectations. This has to include the one group that is generally missing from the teacher educator literature--the students.

The professional development of teachers must incorporate a fuller dialogue with all participants in the system(s) of schools because it must focus on the lived experience of all members of the system(s). For the fullest potential of community, discourse, and reflection to be realized, these conceptions cannot be separated or made into technical procedures. Language is the central feature of public discourse. It is the way in which the everyday life world and the self are understood. To achieve a richer self understanding and a fuller knowledge of social groups, dialogic reflection must be a feature of teacher preparation programs. Teacher educators cannot compartmentalize community(ies), discourse, or reflection. By attending to Mead's community, educators could find the empowerment and the enhancement of teacher education.

REFLECTIVITY AND THE INSTRUCTIONAL PROCESS: A DEFINITIONAL COMPARISON BETWEEN THEORY AND PRACTICE

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Within the realm of teacher education, various elements have been suggested to improve the process and profession of teaching. One that has recently acquired renewed popularity and attention is the notion of reflectivity. But ambiguity and vagueness regarding reflectivity is not uncommon in examinations of the use and importance of this characteristic related to education. As an example, the 1985 Kogan Page publication entitled *Reflection: Turning Experience Into Learning* examines various dimensions of the use of reflectivity in learning. Implicit in the content of the book, but not addressed in the book, is the value based assumption that teachers *ought* to incorporate forms of reflectivity in their instruction. This valuative assertion if carefully clarified and justified, we believe, will clarify the specific dimensions of the notion so that it can be more commonly discussed and more practically used.

In the field of teacher education, Bagenstos suggests that the goal for teachers is to "search for meaning and rationality in their work." This, to her, is the notion of reflection--a search or inquiry. Gitlin, also in the field of teacher education, refers to reflection as "evaluation which leads to the analysis of one's intents and subsequent practice." Other writers describe reflectivity as "informal improvisation" founded on knowledge (Schon) or "self-investigation and renewal" (Kemmis) and a search for underlying principles (Diamonti). Dewey's discussion of reflectivity addresses the blend of theory and practice and he suggests that reflectivity has an important role to play turning experience into learning. In the 1985 Jossey-Bass publication *Using Research to Improve Teaching* reflectivity is defined as "musing and puzzling over a problem and venturing into new areas of inquiry." And Hart adds that this same activity is "one's pondered sense of things." Co-authors Furedy and Furedy specifically define reflectivity in relation to teaching undergraduate psychology: "Dialogue and reflection entail a readiness to examine and lay out one's educational values, to engage in a discussion and to pursue issues to the point of real clarification . . . . The result of the process often is the generating of an idea that neither party had at the beginning of the exchange."

What do these definitions or explanations add to the clarification of the notion of reflectivity? First, reflectivity looks back, under, or into the present issue to find an underlying principle. The reflective teacher is one who recognizes the importance and convicting force of reason. Second, reflectivity must lead the thinker into a disposition to respond--an habitual tendency to inquire. Third, reflectivity is discovery in nature. It probes into what Polyani describes as the TACIT DIMENSION and uncovers ways of thinking and perceiving that are unprescribed and unexpected--it is adventurous. Finally, reflectivity is not limited to pre-planned activities. The intentionality to promote learning can be on-the-spot and the response action may be immediate or without long deliberation. In other words, reflectivity is not time bound. It is sometimes deliberate and at other times immediate. If it is immediate, however, it is because, as Dewey says, the knowledge base has become part of the person and the immediate response in practice is in accord with the theoretical base. A careful distinction must be included at this point to avoid the conclusion that reflectivity can be totally intuitive. Reflectivity is an important human activity in which people recapture their experience, think about it, mull it over and evaluate it. Why is it that this activity must take place at a conscious level? Certainly unconscious processes of learning and/or instruction do occur. But these unconscious processes do not allow us to make active and aware decisions about our learning. It is only when we bring

our ideas to our consciousness that we can evaluate them and begin to make choices about what we will and will not do. If the step of conscious awareness and choice is omitted, the activity may be a learning experience or a teaching experience -- but it is not reflective teaching or reflective learning.

In summary the concept of reflectivity is a reasoned, principled response through either pre-planned or spontaneous but conscious action in which awareness of past experience and understandings are linked with present experience to lead to new understandings and appreciations.

The Value of Reflectivity

First, reflective activity emphasizes both the teacher's and the student's basic freedom of choice. Implicit in the concept of professionalism is the notion that the professional not only can but should make decisions based on a strong theoretical base--a research base, if you will. One of the key features of reflection is the need for teachers to exercise that freedom rather than merely conform to the influence of the administrator, supervisor, or students. Reflection encourages learning and teaching as responsible, mindful, individual endeavors.

Second, reflective inquiry extends the learning experience into what Dewey calls a learning loop. It continually reestablishes relationships between experience and understanding encouraging endless explorations. Essentially this process replaces the trial-and-error learning which limited the specificity of the problem and the scope of the exploration. Gage encourages practitioners to use the "bodies of fairly well-confirmed knowledge" which he calls the scientific basis for teaching. Reflective activity involves the perception of relationships and connections between the parts of experience and provides a much better and broader base for effective problem-solving abilities. In other words, reflective inquiry encourages continued and unending investigation. It is a process for learning how to learn rather than performing a prescribed, end-in-itself treatment.

Third, the reflective process is a complex one in which both feelings and cognition are closely interrelated and interactive. A reflective approach to professional development and classroom inquiry (action research) does not separate psychological influences from cognitive or rational issues but suggests a blending and awareness of the multiple dimensions of the profession of teaching.

Fourth, reflective inquiry encourages new thinking and critical application of experiences from individual perspectives. Because past experiences and preferences of teachers are accepted by the teacher/experiencer in deference to research by others, decisions made based on past experiences will represent individual cases. Even standard theoretical issues when applied to personal experiences of individual teachers will result in varying actions and understandings. Reflection in classroom research encourages diversity and personal relevance in understanding.

Finally, when reflection is used in the classroom, students are also being subtly encouraged and predisposed to incorporate inquiry and evaluation as an habitual practice in all life experiences. It is a model that will transfer to decision-making and choices throughout the student's experience. Essentially the act of reflection establishes within the teacher *and* the students simultaneously an openmindedness and discernment, rational judgment, and creativity -- all characteristics of the "educated" person.

REFLECTIVE TEACHER EDUCATION: PREFERRED CHARACTERISTICS

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Many teacher education programs now claim to promote the preparation of reflective teachers. Because of its increased popularity teacher educators need to be clear about the assumptions embedded in various approaches. There have been at least two attempts to characterize these reflective or inquiry oriented programs (Tom, 1985; Zeichner, in press). Starting with categories generated by these authors, we argue that there are four main characteristics which distinguish reflective programs and that certain positions within these categories are more justifiable than others. According to Tom (1985), there are three primary dimensions upon which inquiry oriented teacher education programs can be distinguished: (a) the arena of the problematic or the program's focus of inquiry; (b) the model of inquiry or the exploration of an arena through a particular process model; and (c) the ontological status of educational phenomena or how real, observable and law-like one views the facets which make up education. To these dimensions, Zeichner adds five: (a) the level at which intervention is attempted (i.e., total program or program component), (b) the degree to which program goals are linked to broader changes in schools and society, (c) the degree of specificity of the reflective process, (d) the degree to which the approach is justified by reference to theory, and (e) the nature of the strategies employed to enhance reflection. These eight dimensions can be combined into four primary categories: (a) the problem focus, (b) the epistemological foundation, (c) the curriculum scope, and (d) the instructional strategy.

We take the position that an adequate reflective teacher education program must be based on (a) a curriculum approach which incorporates reflection throughout the program, (b) an epistemology which is rigorous, critical and experience based, (c) problems or issues which are normatively situated, and (d) instructional strategies which progressively link knowledge to action. These preferred positions imply that graduates of reflective teacher education programs should have the ability to stand apart from the self to critically examine their own actions and the context of those actions for the purpose of a more consciously driven mode of professional activity, as contrasted with action based on habit, tradition, or impulse (Berlak & Berlak, 1981). Assumptions which underline this approach are that reflectivity is difficult, but possible, to acquire, internalize and transfer (Perkins, 1986); that reflection is both a skill and a philosophical orientation; and that there is no warrant to limiting the object of inquiry. Furthermore, since many pre-service teachers view schooling and professional preparation technically, with a narrow focus on teaching and learning aspects (Zeichner, in press), a reflective teacher education program should serve to broaden and deepen their thinking.

Curriculum Scope: Total Program vs. Course/Component

In most reflective or inquiry based programs, the curricular aspects designed to promote reflection and inquiry occur within isolated courses or course components (Zeichner, in press). A program aimed at promoting reflective capabilities should employ an infused approach, an approach which formulates the entire professional education curriculum around this central goal. As Perkins (1986) has argued, instructional efforts to develop students' thinking often fail because they do not require enough practice. Acquiring a new way of thinking demands repeated practice before its use becomes automatic. An infused approach to a reflective teacher education program is necessary if students are to internalize and transfer new ways of thinking about teaching. Such a comprehensive approach can be accomplished in a coherent and integrated way through a conceptual framework which explicates the type of and content for reflection being promoted.

Epistemological Foundation: Common Sense vs. Scholarly Disciplines

Epistemological differences are embedded in the various academic disciplines, and in various research traditions (i.e., positivist, hermeneutic, and critical). At an even more fundamental level, common sense and academic disciplines also embody two different ways of knowing. Both Tom and Zeichner argue for teacher education programs derived from disciplined or rigorous epistemologies, which can guide the practice of teaching. Tom argues for programs which link knowledge and action through disciplined inquiry (1985). Zeichner argues for the need to justify particular approaches by reference to theory, and to more precisely describe the reflective process as well as instructional strategies used to encourage or develop reflection.

While we agree with these positions, we would also argue for a mode of inquiry which encouraged a continuous dialectical relationship between common-sense notions and theories/research derived from all modes of scholarly inquiry. This dialectical relationship is important for two reasons. First, common sense is not necessarily faulty. As Gramsci would say, it includes *good* sense, rational ways of viewing the world (Entwistle, 1979). Secondly, even when common sense embodies bad judgment, it is not easily replaced by more grounded and coherent knowledge. As Paul (1987) argues, each of us has sets of entrenched, unexamined knowledge. These ideas and beliefs are not easily replaced by knowledge learned in school. The construction of a rigorous mode of inquiry which has the capacity to affect behavior can only occur when uncritically accepted ideas and actions are examined in a dialectical setting.

Problem Focus: Narrow vs. Broad

Teacher education programs currently vary in terms of what aspects of teaching and schooling are made problematic. The range goes from a narrow, isolated focus on teaching and learning, to questions about the curriculum and subject matter, to political and ethical considerations, and finally to the very nature of society and its impact on the schooling process. Reflective programs with a broad focus encourage students to think beyond issues of teaching and learning to reflect on the ethical, moral and social consequences of actions. These programs generally take the ontological position that educational phenomena are socially constructed and focus on normative questions of the school's role in creating a more just society. Reflective programs with a narrow focus, on the other hand, view educational phenomena as natural and law-like; their concern is generally limited to making teaching more effective.

Normative implications and social consequences of teachers' actions should be in the forefront of the professional education curriculum. Moreover, we reject the notion that focusing on the small arena of the problematic necessarily limits reflection to technical issues. Though this might be common practice, normative and ethical issues are just as deeply embedded in the teaching/learning arena of the problematic as they are in the broad arena of school and society. Therefore, our position on the preferred problem focus for a reflective teacher education program is that the focus range from narrow to broad and that technical problems be situated within their normative assumptions and implications.

Instructional Strategies: Simulated vs. Naturalistic

Instructional strategies that tend to characterize reflective programs include action research, ethnography, writing and reflection, supervision and reflective teaching, curriculum development and analysis and reflective teaching. Course related assignments, activities, and questions can be developed which will give students experience in understanding and dealing with the total spectrum of teaching. Strategies such as questioning, case studies (simulated and real), and non-directive supervision can move students toward independent application in natural settings. With regard to supervision, cooperating teachers must do more than model good instruction. They must be consciously self-analytic about their own teaching in conversations with the student teacher and must be able to assist the student teacher in that same reflective process.

THE KNOWLEDGE BASE IN TEACHER EDUCATION: CRITERIA FOR A FRAMEWORK

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This paper proposes criteria for a framework which would help teachers and prospective teachers bring knowledge to bear on practice. The primary assumption is that an adequate framework can facilitate the improvement of practice, whereas an *inadequate* framework at best will be ignored, and at worst will misdirect the practice of teaching. While there are numerous conceptions of knowledge base frameworks for teaching and teacher education, to our knowledge no criteria have been proposed to evaluate or compare conflicting conceptions.

A critical distinction to make from the start is between knowledge base and knowledge base framework. By knowledge base we mean the entire repertoire of skills, information, attitudes, etc., which teachers should have in order to carry out their classroom responsibilities. There have been several attempts to identify the range of knowledge teachers should have. Shulman (1987), for instance, has suggested if teacher knowledge were organized in a handbook, prominent categories would be: content knowledge, general pedagogical knowledge, curriculum knowledge, pedagogical content knowledge, learner knowledge, knowledge of educational contexts, and knowledge of educational goals and values.

The American Association of Colleges for Teacher Education (AACTE 1983), the National Council for Accreditation of Teacher Education (NCATE 1986), and the National Association of State Directors of Teacher Education and Certification (NASDTEC 1986) have generated similar but more specific categories. These associations include items such as familiarity with new technologies, detecting bias in subject matter, understanding the governance structure of schools, awareness of professional ethics and responsibilities, knowledge of statistics and research methods for improving practice, classroom management strategies, understanding classrooms and schools as social systems, and insight into cultural influences on learning.

These lists of knowledge areas, however, are quite different from *a framework* for a knowledge base, by which we mean the structure which both organizes that knowledge and informs teachers' thinking about it. A framework comprises domains of content knowledge as well as the form in which that knowledge is presented. In his AERA presidential address, Shulman (1986) stated that "a conceptual analysis of knowledge for teachers would necessarily be based on a framework for classifying both the domains and categories of teacher knowledge, on the one hand, and the forms for representing that knowledge, on the other". In Shulman's form schema, knowledge is derived from three different sources: disciplined empirical or philosophical inquiry, practical experience, and moral or ethical reasoning. By extension, then, "knowledge sources" becomes a third part of a knowledge base framework, which would necessarily comprise knowledge content, form, and sources.

What this suggests is that the same knowledge can be framed differently and that there can be agreement on the knowledge base content (or, as some would argue, the knowledge bases) but disagreement about the adequacy of the framing, on the way the knowledge is organized and presented, on the form(s) it takes, and on the relative importance of the sources. If this is so, the frame--and the criteria for that frame--become just as important, or perhaps more important, than the content itself. As Schon argues

"those who hold conflicting frames pay attention to different facts and make different sense of the facts they notice" (1987: 5).

ADEQUACY CRITERIA

We propose that a knowledge base framework must embody five characteristics for it to be adequate to inform the practice of teaching and teacher education. We call these characteristics adequacy criteria and argue that a knowledge base framework must

1) include knowledge derived from all relevant scholarly traditions
2) present competing views of teaching and schooling
3) show relationships between technical and normative aspects of teaching
4) be useful and accessible to practitioners
5) encourage reflective practice

These will be called the scholarly criterion, the multiplicity criterion, the relatedness criterion, the usefulness criterion, and the reflectivity criterion. Though some of the criteria overlap or underlie other criteria, we have specified each separately to better argue the importance of each to a framework for the knowledge base.

THE SCHOLARLY CRITERION

Knowledge and forms of inquiry from the traditional academic disciplines are essential parts of the knowledge base. But scholarship is not restricted to those formal disciplines. It would also include the wisdom of practice. As Tom (1984) points out, craft and scientific knowledge are not necessarily opposites. Rather, the scientific mode of thinking originated in the medieval crafts with observation and experimentation to solve the problems of practice. Thus, craft knowledge need not be derived out of trial and error experience but instead can entail systematic analysis of teaching practice.

MULTIPLICITY

The preparation of teachers is essentially an educational, not a training, enterprise. Competing explanations, perspectives and theories which meet commonly accepted standards of scholarship must be presented. Teachers and prospective teachers should learn, for example, that the same phenomena can be viewed from different perspectives (e.g., positivist or critical, behaviorist or cognitive, craft or research); that there are fierce debates about the content of the curriculum and the purposes of schooling; and that the different theories can produce different answers to educational questions.

RELATEDNESS

Though the knowledge base has been clarified by the definitional distinction between descriptive and prescriptive knowledge, it has been harmed by the practical separation of the two. Knowledge is now too often treated as neutral. Technical questions of "how to" are treated as ends in themselves, with the mistaken assumption that they are value-free. This technical, reductionist tendency in teacher education pushes the social, political, and cultural aspects of schooling to the periphery and concentrates on pedagogical and behavior management techniques.

We would argue that "how to" questions, which are rooted in the pedagogical and instructional sources of teaching, must always be presented in the context of and subordinated to normative questions of goals, purposes, values and meanings, which have their roots in the social context of schooling. An adequate conceptual framework, in other words, would have to treat learning, knowledge, and schooling in social and historical perspectives. The knowledge base framework should bring together the technical and normative aspects of teaching and treat them synthetically.

USEFULNESS

The knowledge base should be organized in a manner which is applicable to concrete situations of teaching. The way in which it is presented should cause teachers to care about it, to think that new knowledge will make a difference in their professional practice. This means that the presentation of the knowledge base must be meaningful or accessible to the practitioner; it must ring true to experience. Two expressions which Shulman (1987: 5) uses--intuitive credibility and face validity--capture the essence of this criterion.

REFLECTIVITY

The knowledge base should be presented in a manner which encourages thoughtfulness about schooling practices. At minimum its organization should do this by emphasizing the limited applications and competing interpretations of research findings and the need for wise judgment in using craft and research knowledge. This can be done by contrasting competing visions of good teaching and by emphasizing that questions of values and goals cannot be adjudicated through empirical knowledge, that there is fundamental difference between "what is" and "what ought to be". The inclusion of this criterion implies that the primary problem within teacher education is not applying knowledge to practice but, rather, embedding a professional mode of thinking within practice. In Schon's (1987) terms, reflection-in-action is necessary because teaching is characterized by uncertainty, uniqueness, and value- conflicts.

CONCLUSION

Logical places to look for knowledge base frameworks are in the writings of teaching and teacher education scholars (e.g., Shulman 1986, 1987; Tom 1985, in press), in documents from professional organizations and state agencies (e.g., AACTE, NCATE, NASCTEC), and in descriptions of teacher education programs (e.g., Cruickshank's "Reflective Teaching", The University of Wisconsin-Madison's elementary education student-teaching seminar). Yet, only the vaguest outlines of a knowledge base framework could be found in some of those places. Of the five adequacy criteria, the scholarly quality of the knowledge base was the one most often met in the documents reviewed--though there is considerable disagreement in the profession as to what constitutes scholarly knowledge. The two criteria least often addressed were multiplicity and relatedness. At this point, the profession seems more concerned about training teachers to be proficient in technique then educating them in broad, diverse, and sometimes competing ways of analyzing educational problems. Few teacher educators systematically link technical considerations to their normative or ethical base.

REFLECTIVE TEACHING: MEANING AND IMPLICATIONS FOR PRESERVICE TEACHER EDUCATORS

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One of the problems facing teacher educators attempting to place more emphasis on reflection is our inability to adequately define our goals or to assess our progress in reaching our goals. This paper provides a theoretical framework for defining reflection which includes the explanation of developmental stages in the progressive development of competence in making reflective judgments. Reflection is a way of thinking about educational matters that involves the ability to make rational choices and to assume responsibility for those choices (Feiman, 1979; Goodman, 1984; Ross, 1987; Zeichner & Liston, 1987). The development of competent reflection rests upon the development of three distinct components: (1) development of the processes involved in reflection, (2) development of attitudes essential to reflection, and (3) a definition of the appropriate content of reflection (i.e., what students think about). A summary of available knowledge about the elements of each component is provided in Chart 1.

The information summarized in Chart 1 provides a comprehensive picture of the goals of teacher educators wishing to prepare reflective teachers. The work of Kitchener (1977) and King (1977), psychologists studying the development of reflective judgement in adults, adds to this picture by providing a view of developmental stages. By using this theory as an operational framework which helps to define qualitative changes in the progress of reflective judgement, educators gain an understanding of patterns in students' responses and the differences in students' abilities to exercise reflective judgment. This understanding is critical to our efforts to plan appropriate instructional strategies and to recognize progress in the development of student judgment (Schmidt & Davidson, 1983; Welfel, 1982).

According to Kitchener (1977), reflective judgment becomes increasingly complex over time by progressing through seven stages which vary on such criteria as one's view of the nature of knowledge, one's view of the nature and use of convincing evidence, one's willingness to accept responsibility for one's decisions, and one's openness to new evidence once a decision has been made. In early stages, the world is viewed as simple, knowledge is seen as absolute, and authorities are seen as the source of all knowledge. In the middle stages (3 and 4) one is able to acknowledge that differences of viewpoint exist, and knowledge is viewed as relative with varying positions seen as equally right or equally wrong. One develops a beginning ability to evaluate and interpret evidence but unsupported personal belief (whim) is used as frequently as evidence in making decisions. During later stages (5 through 7) one sees knowledge as contextually based, recognizes that an integrated perspective can be evaluated as more or less likely to be true, and develops the ability to integrate evidence into a coherent point of view. Additionally, by stage 7, one is able to make objective judgements based on reasoning and evidence and is able to modify decisions and judgments based on new evidence if necessary.

Achieving the goals of reflectivity may be problematic given current data about the levels of reflective judgement demonstrated by college age students. Levels of reflective judgement increase with both age and education (Schmidt, 1985; Welfel & Davidson, 1986). Cross-sectional studies which indicated higher stage attainment by college seniors than those attained by college freshmen (Kitchener & King, 1981) have been validated through longitudinal studies (King, Kitchener, Davidson, Parker & Wood, 1983; Schmidt, 1985; Welfel & Davidson, 1986). Data indicate that non-traditional students (students who are older than their classmates) tend to have higher scores than traditional students but that the scores of non-traditional freshmen are still below the scores of traditional juniors (Schmidt,

1985). This means that both age and education contribute to the attainment of higher levels of reflective judgment. Thus, it is encouraging to see that college education makes some contribution to the development of reflective judgment. However, each study has documented the fact that the majority of college students score between stages two and four (Kitchener, 1977: Welfel, 1982; Schmidt, 1985; Schmidt & Davidson, 1983). This means that most college seniors still use whim as often as logic or evidence in making decisions and see no logical way to differentiate between conflicting positions. While a few students reach stage five, college educators seem unable to move students beyond moderate levels of reflective judgment. Higher levels are seen in advanced graduate students(Kitchener, 1977).

DEFINING THE COMPONENTS OF MATURE REFLECTION
CHART 1

Definition: Reflection is a way of thinking about educational matters that involves the ability to make rational choices and to assume responsibility for those choices.

Processes	Attitudes
- ability to view teaching as problematic	- open-mindedness; introspective, willing to consider the possibility of error
- ability to analyze problems in terms of issues	
- ability to use a rational problem solving approach	
- ability to make intuitive judgments	- willingness to assume responsibility for one's decisions and actions
- ability to take action based on personal choices and to monitor the effects of that action by attending to the intended and unintended consequences	
	- wholeheartedness: confident self-reliant, capable of self-evaluation
- ability to modify and extend one's educational appreciation system	

Content

- knowledge of the purposes and consequences of educational practices (pedagogical knowledge)
- knowledge of student point of view
- knowledge of the material and ideological constraints of various contexts
- knowledge of ways to increase self-knowledge
- knowledge of subject matter
- knowledge of a wide range of educational environments, practices and philosophical orientations

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These studies open the goals of teacher educators to question. Is it possible for college students to develop the mature processes and attitudes that educators believe are essential to competent reflection? Studies have not been conducted in programs specifically designed to help students develop mature reflective judgment. Clearly, this question needs to be pursued. The work of Kitchener and King provides a useful framework to educators attempting to facilitate the development of reflective thinking and teaching. While our ultimate goal may be the development of mature reflective judgment, Kitchener and King provide a comprehensive picture of the progressive development of the processes and attitudes involved in mature reflection and a means for judging progress in the development of reflection. Additionally, the theory helps us understand student difficulties and misunderstandings during their educational program and suggests some strategies critical to the progressive development of reflectivity.

RETHINKING THE RHETORIC OF "REFLECTIVE INQUIRY" IN TEACHER EDUCATION PROGRAMS

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This paper examines the usefulness of the rhetoric of "reflective inquiry" as an organizing focus of teacher education programs. We discuss the ambiguity and limitations of this rhetoric and our rethinking of what this concept means in teacher preparation. We suggest the fruitfulness of a related concept -- the heuristic of "design" -- as an organizing focus in teacher education. Our thinking about the concept of reflective inquiry occurred as we developed an innovative teacher education program -- Teachers for Rural Alaska -- to prepare post- baccalaureate, non-education majors to teach in Alaska's small rural high schools. Most of these schools enroll Alaska Native students with limited facility in standard English and a cultural background different from the one conventional textbooks assume. Teachers in these schools frequently find themselves teaching classes that include students of different grade levels working on different subjects. Outside of the school setting, teachers often face challenges associated with living in culturally different communities where they must negotiate local values and customs and where racial tensions may run high.

In such contexts, effective teaching means much more than the application of research findings to classroom situations. The "effective teaching" and "effective schooling" research is useful in these schools, as experienced rural teachers testify. Nonetheless, such educational research does not speak to the challenges teachers face in working in culturally diverse classrooms and communities. Further, the usefulness of such research findings in *any* setting is not a matter of following straightforward formulas.

In developing the Teachers for Rural Alaska program, we originally chose the conceptual focus of "reflective inquiry" into universal "problems" of teaching as a means of communicating to prospective teachers that there are no simple recipes for teaching. The concept of reflective inquiry emphasizes the problematic nature of practice, its complexity, and the uniqueness of *any* particular teaching situation. As Schon observes (1983), practitioners invariably work in situations of "uncertainty, disorder, and indeterminacy" where they are "embroiled in conflicts of values, goals, purposes and interests" (pp. 16,17). The professional's work is thinking through and acting wisely in such complex situations, not applying technical research-based formulas to them.

When we tried to use the concept of reflective inquiry to guide us in the practical tasks of selecting appropriate curriculum for our teacher preparation program, we became painfully aware of the concept's rhetorical limitations. The term "reflective inquiry" in and of itself doesn't help much in talking about *what* is to be reflected upon, *how* this reflection is to occur, and *to what ends* it is to be directed. Furthermore, to our students, it meant little more than that they should "think about" the business of teaching. It did not push them into new and fruitful directions.

In addition, the term "reflection" carried negative connotations for our students and for the experienced teachers with whom we were working. Practitioners saw the work of teaching as action-oriented and reflection as what university professors have time to do. The term exacerbated the discontinuity students perceived between teacher education activities occurring in the university setting and those happening in classrooms. "Reflection" was what occurred at the university. "Real" learning about teaching occurred through experience "in the trenches" of the classroom.

Still, we wanted our students to think about such matters as the worthiness of alternative educational goals, the possible instructional strategies available to them, the criteria through which they chose one strategy over another, and the implications of their classroom choices for the larger school and community culture in which they worked. In searching for a more fruitful heuristic than "reflective inquiry," we came upon the valuable work of Donald Schon (1983, 1987).

Schon argues that professional practice of all types is fundamentally concerned with the issue of *"design" -- that is, ways of transforming present situations*. What skillful and experienced practitioners actually do in attempting to change present situations into more desirable future ones is to impose a design on an ambiguous situation, work out in thought and action the implications of the design, judge the fit between their design and what they want to accomplish, and then revise their design.

"Design" is a powerful metaphor to describe the work of teachers, particularly in ambiguous, multicultural environments. "Design" aptly describes what our student teachers do as they try to work out a curriculum that fits particular classroom, school, and community contexts. "Design" carries interesting and potentially fruitful images -- the architect, the building plan, the portfolio. It suggests new avenues for us to think about teacher education -- in terms of the types of thinking we are trying to develop in prospective teachers, the kinds of tasks and projects we should require them to accomplish, the ways in which we should evaluate their progress.

We have begun to reorient our program around the language of "design." In short, the concept of "design" has become our operational definition of "reflective inquiry." The metaphorical language of "design" makes the thought processes behind the label "reflective inquiry" more accessible to preservice students. For them, it captures a more active sense of teachers' work than the term "reflection" passively connotes. It promotes images of inventing and constructing, with intents, purposes and goals informing both mental organization and physical activity. The metaphor of "design," then, more adequately describes teachers' everyday practice while preserving the dynamics and values of reflective inquiry into practical situations. As we see it -- drawing heavily on Schon's work -- "design" encompasses five basic activities: (a) Naming and Framing Situational Issues/Problems, (b) Appraising Worth of Goals, (c) Sorting Images and Selecting Strategies, (d) Spinning out Consequences, and (e) Re-Viewing and Revising. We briefly describe below each activity involved in the process we see as "design" in teaching.

Naming and Framing

Central to professional practice is the process of defining "the problem" to be attended. "Problem-setting," argues Schon (1983) "is a process in which, interactively, we ***name*** the things to which we will attend and ***frame*** the context in which we will attend to them" (p.40, emphasis in the original). In determining "problems," teachers select the features of a situation to which they will give attention, set the limits of that attention, and, in so doing, impose an order on the situation. Through this process, ends are clarified and means are organized.

The framing of issues and problems by preservice teachers is influenced by their attitudes (Dewey, 1933), role-orientation (Schon, 1983), past schooling experiences and personal biographies (Lortie, 1975), nascent pedagogical commitments and philosophies (Erickson, 1986), as well as their perspectives deriving from disciplinary training. Through reading case studies of rural teaching situations, our students become aware of the ways they tend to frame and define problems and come to realize that other ways of framing situations may lead to better strategies for accomplishing their goals.

Appraising Worth

This aspect of the design process considers the relative worthiness of the various

goals that teachers implicitly or explicitly hold for students, and the criteria by which that worth can be judged. As the process of problem-setting clarifies goals, teachers become concerned with the ends of education. Questions such as "What knowledge should be taught to whom?" occupy a central place. To teach this process, our students explicitly discuss -- and formally debate -- the worthiness of alternative goals in teaching both broad subjects and specific lessons. We ask groups of students, for example, to decide on their objectives in teaching a particular story to Alaska Native students, compare the objectives of each group, and discuss the criteria through which we should evaluate alternative sets of objectives.

Sorting Images and Selecting Strategies

Having defined an issue or problem and clarified the worthiness of related goals, teachers need a repertoire of approaches and images suggesting possible solution strategies that they can sort through. This sorting process is shaped by teachers' problem frames, their visions of possible goals, and their beliefs and commitments. Of course, teacher preparation programs usually support this aspect of the design process by providing students with opportunities to learn useful instructional approaches (e.g., motivational approaches, reading strategies). Less frequently, programs help teacher candidates recall strategies or images of teaching they have picked up elsewhere and, then, help them to analyze those images and strategies against possible educational goals. Our program emphasizes both processes in developing a well-stocked repertoire of action images.

Spinning Out Consequences

Judging the "fit" between the invented design and what the teacher wants to accomplish involves spinning out potential consequences of possible actions. Teachers must assess the likelihood that their selected goals will be achieved, and that a problem will be diminished or managed. They must imagine intended and unintended consequences along both positive and negative lines. Preservice students, we have found, often have difficulties imagining consequences. This limitation may be due to their lack of contextual knowledge and means-ends sequences developed from past experience. Of course, individuals also differ along dimensions of cognitive flexibility. In discussing cases of rural teaching problems and in designing lesson plans, we require students to try to imagine the sequence of events likely to occur as a result of the strategies they select.

Re-viewing and Revising

Practitioners reframe and revise designs, both as a result of spinning out imaginative consequences and as a result of appraising initial actions. In order to do so in productive and adequate ways, they must be able to "see" situations with "new eyes" and to reshape their definitions of problems and issues. They rethink the fit between contextual factors, purposes and the consequences of chosen strategies. We emphasize this process in teacher preparation through such means as requiring students to try out a lesson plan and then write a description of how and why they would revise the lesson.

In sum, as teacher educators we question the rhetorical value of the term "reflective inquiry" in designing teacher education programs for multicultural contexts. Our teacher education students and the experienced teachers with whom we work also do not find the language of "reflective inquiry" particularly useful. However, we have not given up the *concept* of "reflective inquiry" in our teacher education program. The concept performs the useful function of reminding us that teaching is not simply a matter of applying research-based findings to classrooms. The concept reminds us that teaching is a complex, ambiguous activity requiring careful consideration of purposes, situations, and means, and their relationships. What we *have* done is to operationalize the concept of "reflective inquiry" in a concrete and active way -- as the process of "design." The *language* of "design" increases the accessibility and usefulness of "reflective inquiry" in the everyday practice of teaching.

PROMOTING TEACHER REFLECTION THROUGH STRUCTURED DIALOGUE

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Why is reflection a proper goal for teacher education programs? Simply put, reflection is one of the critical ways in which teachers create meaning from their teaching. In its absence we run the risk that what may dominate teaching will be the routines of practice; disciplined inquiry about the purposes of such routines, the advisability of changing them, or their effectiveness occur when teachers engage in reflection about their practice.

Reflection on teaching can take place on many levels. Teachers can reflect about their choices of technique, about the relationship of technique to student needs, and about the broader social implications of school and districtwide curricular choices for students. Each level of reflection is essential to responsible preparation for teaching. The problem for teacher educators is how to develop the disposition, or habit, of reflection in preservice students. A basic assumption of our work on reflection using structured dialogue is that it is both possible and necessary to prompt teachers explicitly to engage in reflective thinking. The term "strategies" is used purposefully here since it connotes the acquisition of *processes* one uses in thinking rather than the acquisition of discrete skills or techniques. In this context, reflective thinking is directly related to the concept of metacognition; research on metacognition is fundamentally concerned with the development of processes associated with how one thinks about or approaches complex situations, or thinking about the way one thinks (Brown, 1978). Thus, promoting reflection in teaching is not the same as the promoting a concrete set of techniques - or a recipe - for thinking. In contrast, reflection as we are defining it encourages the habitual use of more disciplined thinking processes with which teachers can approach the complexity of their work.

Two other assumptions have also guided our work. The first is that reflection is best promoted through collegial interaction between teachers. Not only does collegial interaction allow teachers to share expertise and insight, but it also facilitates the acquistion of the specific reflective processes in which we are interested. The second assumption is that the current conditions of teaching and schooling mitigate against teacher reflection; the expectation for teachers to think about, question, and reconsider the implications of their teaching can be supported by consciously arranging the school organization to promote such goals.

For the past three years, we have been investigating a four-step dialogue called Peer Collaboration as a means of helping teachers develop the habit of reflection. Working with practicing teachers, we have focused on creating new meanings for immediate classroom problems - meanings that are meant to help teachers move from concentrating on immediate symptoms and frustrations to constructive responses based upon more disciplined self-inquiry into the situation. Teachers work in collaborative partnerships with other classroom teachers as they follow each step of the dialogue. Working in pairs, one teacher takes the role of "initiator" and follows each step of the process, while the second teacher takes the role of process "facilitator," guiding his or her partner to utilize each strategy appropriately and to proceed from step to step. Training in Peer Collaboration begins with a discussion of the goal of strategic thinking and the relationship between the specific strategies to be learned and that goal. This is followed by demonstration, practice, and feedback on each of the four component steps. The first three steps are adaptations of

metacognitive strategies that have been particularly successful in improving reading comprehension through an approach known as reciprocal teaching (Palincsar & Brown, 1984).

In the first step, teachers engage in explicit self-questioning and responding to clarify the situation of concern. The purpose of this step is to identify a range of factors that might be contributing to the situation or that might be appropriate in developing a response or solution. The process of self-questioning also provides the opportunity for teachers to access potentially relevant but formerly inert information. Examples of question formats might include: "What other activities are taking place when the problem occurs?" or "In what areas is the student able to do well?" or "How is the teacher responding to the situation now?" The facilitating teacher participates by providing feedback on the question format (for example, disallowing yes/no or speculative "Why" questions) and by modeling appropriate questions if the initiating teacher either (a) is unable to generate questions independently or (b) fails to self-question on relevant variables mentioned in the description or previous questions. Clarification, then, broadens how teachers conceptualize teaching- learning situations and sources of difficulty that are arising.

In the second step, the initiating teacher summarizes the situation following a specified format. The summary includes the identification of a pattern of student/teacher behavior, the teacher's affective response to the situation, and the identification of relevant variables under the teacher's control. Similar to the first step, the facilitator's role is to ensure that each part of the summary is completed appropriately and to model summarizing strategies as necessary. Summarizing provides teachers with the opportunity to recast the situation in light of the clarifying questions, to recognize that things are not always as they first appear, to reconsider the assumptions upon which their previous understandings of the situation were based, and to begin to rethink the range of potential responses based upon relevant classroom and teacher variables.

The third step of the process requires the initiating teacher to develop at least three response patterns for use in the classroom, to predict the outcomes of each, and to select one for actual implementation. In this step, the facilitator focuses the initiator's thinking on the relationship of potential responses to those variables identified in the previous summary. The third step is designed to promote flexibility and creativity in developing responses, to practice thinking through plans before their implementation, and to develop an understanding that one's first idea may not be one's best.

The final step in Peer Collaboration requires the development of a plan to evaluate the response or intervention selected for implementation. The plan is intended to be practical in nature and easy to follow. Since the teacher is encouraged to think through the degree to which the plan is workable within the constraints of the classroom, prediction plays a part in this step of the process as well. Once again, the facilitator prompts his or her partner to follow the planning strategy and models planning for evaluation as needed. Partners agree to meet again in at least two week intervals to review progress or reconsider the situation anew.

To date, our research indicates that what is most difficult for teachers is the process of clarifying their understandings of classroom situations through guided self-questioning. By design, this step is a highly self-conscious act and as a result, teacher discomfort with its acquisition is reasonable. But this kind of clarification seems to be at the heart of the reflective process. Once teachers feel comfortable with the strategy of clarifying, they engage in it eagerly, quickly moving into the strategies of summarizing, generating alternatives and predicting outcomes.

METHODS FOR FOSTERING TEACHER EDUCATION STUDENTS' REFLECTIVE ANALYSIS OF RESEARCH ON TEACHING

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While preservice teachers are not clinically supervised in the strict sense, there are still opportunities for working with them under controlled conditions to guide their practice. One of these opportunities involves the observation of classroom teaching. Although the observation process is only one of many activities in teacher education where reflectivity could be applied, we chose it for two reasons. It could be used early in a student's program, and it could serve as a means of developing sensitivity to a variety of teaching behaviors and to research on those behaviors. To overcome the logistics of sending students to classrooms to observe, the College of Education at Iowa State University is currently " . . . bringing the classroom to the students. . ." by using two substitute methods: (1) live TV transmission from several schools in the area, and (2) interactive videotapes.

Prior to assigning students into either of these activities it is particularly important to lay a solid foundation. Students may bring long-standing biases and beliefs to the process of observing teaching, and these beliefs may cloud or temper the objectivity with which the observing is done. Instruction about specific types of teaching behaviors is typically done by assigned reading, followed by lectures and class discussion. Where possible, selected videotapes of classroom teaching behaviors may be used to show examples of the behaviors to be observed later. All of these techniques are on the "action" side of the ledger, but they are necessary to set the stage for reflective analysis of teaching.

It is particularly important to include a research-based during this instruction phase. Some of this may be found in the text used in the methods course, but in addition a series of monographs, each targeted for a specific behavior, helps focus the background instruction. One difficulty in using research-base information is in the presentation of definitive conclusions. In certain areas there is inconclusive evidence about what works, and why. Students sometimes are left to themselves to formulate a point of view about teaching strategies. Garman (1986) refers to it as a folklore practice. Research findings are used to help students develop background and to see alternative points of view as well as to arrive at a broader base of understanding. This might be one way to reduce the element of folklore that Garman (1986) depicts.

The process of content analysis itself provides guidelines to students for stimulating reflectivity. We inform them that we will look for four criteria in evaluating their writing: (1) General reference to the behavior being observed, (2) Description of the behavior, using key words from the research literature, (3) Citing of an example of the behavior from an incident that was observed, and (4) Critical comments on the effectiveness or ineffectiveness of the behavior. These clues seem to be effective advance organizers in preparing students to carry out the process of reflective inquiry.

Three methods are being used to provide opportunities for reflection. They are: (a) *Interactive Video* , (b) *Live Television*, and (c) *Small Group Discussion*. Interactive videotapes differ from ordinary videotapes by allowing the insertion of questions that allow opportunities for reflective analysis. Under control of the computer the videotape can be stopped and a question can be posed about the behavior that is illustrated on tape. Students can respond with phrases, sentences, or whole paragraphs; a more significant form of responding than single words or multiple-choice. It is tempting to merely interrupt the flow of examples and narrative on tape with a question every few "frames" as is done in programmed instruction. Questions used too frequently might become trivial and low level,

and they might not stimulate reflectivity. Thus, the inquiry points do not occur more often than 2 or 3 times in a 15-minute interactive video lesson. And they sometimes are integrated into the content in such a way that students must repeat the taped segment more than once before answering.

Two interactive video tapes are used for each behavior that is studied: one tape is used for *instruction* and one for *assessment*. The instructional tape precedes the assessment tape . . . and it contains illustrations of various aspects of the behavior described in the research-based monograph that accompanies the tape. Three or four interactive "inquiry points" are embedded in the tape to cause students to stop, reflect, and then formulate a response that is typed into the computer. (These typed responses are stored and later evaluated using the process of content analysis). The assessment tape features approximately 15 minutes of a classroom teacher who teaches a lesson that is focused on the target behavior. After the teaching, students assess the behavior they have seen exhibited, using the computer to do so. After the assessment is recorded the tape is activated to show the featured teacher being interviewed about the lesson. (We sometimes refer to that as the "post-game interview.") As a final opportunity for reflection the student is encourage to type a free response of any desired length, presenting thoughts that may have been stimulated by the teacher's remarks, or as is sometimes the case a rebuttal.

The assessment module provides for reflective analysis in several ways: (a) The featured teacher must conduct a reflective self-analysis to prepare for comments to the student, (b) Students must conduct a similar analysis to write their comments, and (c) Even before teaching, the teacher must study the research base pertaining to the behavior in order to incorporate findings in the lesson as demonstration points. This cooperation with classroom teachers who furnish the assessment tapes may be an added benefit. While the primary target of the interactive video is the preservice teacher, it is quite possible that practicing teachers may also profit from the reflective process. They engage in this during the preparation of their comments for the assessment module.

Live Television is the second component that provides opportunities for reflection. A component of our teacher education program called Teacher On Television (TOT) is used to bring daily television transmission of classroom teaching to the college. Students can observe elementary classroom teachers in several schools in the area. The observations are structured, with specific instructions for "scripting" the teaching, making anecdotal notes, and recording specific events. These become that basis for a written report that is evaluated using a variety of criteria, including content analysis.

Small Group Discussion is the third component that provides opportunities for reflection. This method for stimulating reflective thinking does not involve observation, but rather is used as a means to foster understanding of the knowledge base by talking about it with others. Students meet for one-hour sessions, in groups of five or six, to discuss materials from the class work and the outside readings. Specific instructions are given to the group and a group leader is designated, since no faculty member is present. Each student prepares a critical analysis of the discussion, which is then evaluated using content analysis techniques.

If one measure of the ability to carry out reflective inquiry is to construct a cogent, systematic, argument to support a point of view, these mechanisms may serve as catalysts to stimulate that type of response. The technique of content analysis may have sufficient power to identify quality responses. Combined with a variety of methods for delivering information over which to reflect, the assessment of teaching behavior may be elevated above the trivial, folklore-type of response. Continued work is underway to bring research-based information to courses in methods of teaching, and to strive for a balance between action and reflection. Those faculty members, classroom teachers, and students who have participated in the enterprise or who have heard descriptions of it have expressed enthusiasm.

JUDGMENT CRITERIA PERSPECTIVES ON A NEW "TEACHER AS REFLECTIVE DECISION-MAKER" MODEL OF TEACHER SUPERVISION & EVALUATION

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What we wish to specifically address in this chapter is the assertion that whatever is meant by the phrase "teacher reflection" should guide what such a teacher education program *teaches*, *models*, and *rewards* in its instructional processes provided to students. This understanding of the "reflective teacher" should also coincide with the *judgment criteria* actually used in teacher supervision and evaluation with program participants. Although this point seems to be obviously sensible, it is not so easily implemented. From constructivist psychology, we know that the functional meanings of the concept "teacher reflection" reside in the minds and actions of individual faculty and students. Such a cognitive schema contains the desired criteria or attributes, their meanings, and their relative weights which the individual believes would characterize competence as a reflective teacher. In most situations, however, such program goals and related evaluative criteria are *fuzzy and individually-constructed concepts, somewhat inaccurate in content, and implicitly held in each person's mind.*

The Teacher as Reflective Practitioner Rhetoric

Although Dewey (1933) long ago emphasized the importance of reflection as a means of learning from experience, it has been only in the last year or two that the idea has received much serious, wide-spread attention in teacher education circles. In Dewey's words, such reflective thinking leads to teachers acting in a "deliberate and intentional fashion" rather than "blind and impulsive" manner (p.17).

Certain attributes of teacher reflection seem to us to provide useful guidance for designing supervision and evaluation procedures to enhance reflection in teachers. We state these as premises for developing our "teacher as reflective decision-maker" supervisory/evaluation model herein and for guiding further dialogue and program research by ourselves and others. The act of teacher reflection: (a) requires being able to move across the typical gap existing between theory and practice in education, (b) occurs through the integrated use of teacher pedagogical knowledge, behaviors, and attitudes and beliefs, (c) involves the cyclical, holistic, and non-linear use of the teacher's cognitive processes including problem-setting, factor naming, interpretation, analysis, synthesis, and evaluation within a decision-making structure leading to action, and in turn, further reflection, (d) implies both a constructivist view of pedagogical knowledge, beliefs, and practice being gradually created by each individual teacher as well as the existence of collective standards for professional use of these by all in the occupational group, (e) is a function of both "nature" and "nurture"--i.e., people vary in their reflective habits and aptitude before entering our programs, but this program outcome can be at least modestly enhanced in most teachers, (f) is influenced both qualititatively and quantitatively by developmental principles such as individual readiness and the teacher's own levels of metacognition, cognitive complexity, and professional commitment and self-efficacy, and (g) can be strengthened by the use of such instructional strategies as modeling cognitive mapping, oral and written "think aloud" exercises, journaling, action research, and structured interviews.

With such a view, the overall teacher preparation program goal is of developing a meta-cognitive, analytical, skillful, morally-responsive, and self-efficacious teacher who is

able to integrate pedagogical knowledge, beliefs, and practices in the instructional decisions which she/he makes. All of this sounds to us a great deal like other phenomena receiving emphasis in current "cutting edge" teacher education programs--e.g., instructional problem-solving, teacher thinking, meta-cognition, critical thinking, emancipatory action research, and so forth.

The difficulty we see with current models of clinical supervision and their variations is that they emphasize analyzing teacher and learner behaviors as they occur rather than analyzing the more comprehensive evidence of teacher thinking, the instructional decisions which are made, and their results. We believe that conventional clinical supervision needs to be updated to focus on the *inter-connections among the thinking, beliefs, and behaviors involved in the act of teaching.*

In Figure 1, we have tried to summarize our current understanding of key developmental components in a proposed process view of enhancing the reflective decision-making of teachers. With such a view, the overall program goal is of developing a meta-cognitive, analytical, skillful, and self-efficacious teacher who is able to integrate pedagogical knowledge, beliefs, and practices in the instructional decisions which she/he makes. Our model, we must stress, is tentative and subject yet to empirical testing. It has been derived through conceptual analysis from our knowledge of the literature and our experiences in two such teacher reflection-oriented programs and related research projects.

FIGURE 1: TEACHER AS REFLECTIVE DECISION-MAKER
PROCESS MODEL FOR TEACHER SUPERVISION & EVALUATION

1. Naive overconfidence: "I know it all"/"I can do it all"
2. Theoretical preparation and some involvement in actual teaching occur
3. Disillusionment with own initial confidence and with theory due to first awareness of the complexity of actual teaching
4. Theory is abandoned as "useless" and imitative use of teacher actions from memorable or nearby "successful" teachers occurs; this becomes own standard for effective teaching

5A	5B
instructive & imitative behavior	integrated concepts, beliefs, & actions

5A. Gets stuck at the instinctive and imitative behavior stage and adopts such points of view as these: (a) "effective teaching is a matter of common sense and one's own personal style" (b) "all that educational theory taught was a waste of time--what counts is out here in the real world", etc.

5B. Begins to make CONCEPTS - BELIEFS - ACTION connections within in a meta-cognitive, critical spirited, cyclical decision-making structure; occurs at first with the direct guidance of others and then increasingly become self-directed process

- 5B-1. Acquires one's own constructed meaning (paraphrasing) of this concept & can demonstrate concept-in-use
- 5B-2. Situation-framing--i.e. recognizes and labels examples and non-examples of this concept-in-use in specific incidents
- 5B-3. Recognizes other concepts related to this concept
- 5B-4. Compares - contrasts this concept with other concepts for relevance to a specific situation at hand
- 5B-5. Recognizes cause - effect relationships associated with this concept
- 5B-6. Makes and implements a tentative instructional decision involving use of this concept in relation to specific goal, context, content, student, and teacher factors
- 5B-7. Monitors results of decision and re-cycles steps #5B-1 through 7 continuously using this concept, new concepts, and sub-concepts

Historically, teachers in our typical programs have learned about important teacher attitudes and behaviors in college and "mentally rejected" educational theory as useless. In other words, they have progressed through steps #1-4 and then gotten stuck at step #5A. This has been exacerbated by most current supervision and evaluation which has emphasized teachers performing the "right" behaviors in the classroom with little consideration of *why and why not, when,* and *what if* questions.

The new model in Figure 1 outlines a more complex process with the addition of steps #5B-1 through 7 for guiding the teacher to integrate pedagogical concepts in meaningful ways with the attitudes and behaviors already being emphasized in our teacher education programs. Consider an example in which a low-achieving pupil, Charlie, is publicly disrespectful to his teacher when asked, "where is your math homework?" by the teacher. The response of the teacher who is "stuck" at step #5A will be rule-bound (e.g., send him to the office), imitative of what she seen modeled by other teachers (e.g., assign him double homework for tomorrow), and/or what determined by what "feels right" in the situation. Such a teacher response will fail to seriously consider contextual factors in Charlie's behavior and to actively monitor the actual effectiveness of her response.

On the other hand, a reflective decision-making teacher of the sort we have been emphasizing here would have the *capacity* and *habit* of identifying pedagogical concepts likely relevant to the situation (e.g., teacher expectations, pupil self-concept, family influences on pupil), analyzing the influence of these concepts in Charlie's specific situation, and selecting and monitoring the effects of a selected teacher response based on understanding of such likely influencing factors. At the most profound and integrative level of teacher reflection, this teacher would critically examine the instructional goals and means in the situation, Charlie's perspectives and values as well as her own, and the moral and ethical dimensions surrounding the school curriculum, Charlie, and herself in society.

We would assert that both field supervisors and campus instructors need to explicitly emphasize these concepts - beliefs - actions connections, or this pedagogical integration is not likely to occur in most teachers. Concern for enhancing a teacher's habitual use of reflective decision-making in gradually deeper and more sophisticated ways during the transition from novice to experienced teacher, of course, presumes a gradual shift from supervisor to the teacher's own responsibility for reflectively thinking - acting in this way.

In a supervisory setting, we have conventionally thought of lesson observation as the "really important" component of the supervision/ evaluation process. The observation supplied performance evidence about which the supervisor made evaluative judgments. These evaluative judgments were then tactfully and democratically "served up" to the teacher during the post-conference. However, with the "teacher as reflective decision-maker" view, the lesson observation and the pre- and post-conference components become ***equally important***. Conferences become the prime opportunities to access the teacher's beliefs, thinking, and decision-making processes regarding what was observed. A pre-conference becomes a time to explore the teacher's thinking and pre-active decision-making concerning concepts - beliefs - actions, connections using "think aloud" structured interview and critical inquiry techniques. The post-conference becomes a time to explore the teacher's interactive decision-making and post-lesson "second thoughts". In other words, conferences are important "teachable moments" from a clinical instruction, tutorial perspective as well as summative evaluation opportunities.

We believe that the phases presented in Figure 1 may be used as framework for supervision and evaluation in either initial or advanced teacher preparation and for campus or field experience settings. The use of this framework in formative and summative evaluation of program participants offers teacher educators a "window" on where a particular teacher is in this progression and suggests what type of clinical instruction a supervisor should provide to the supervise or what type of final evaluation judgment may be made about a teacher's status. It represents our current thinking about the type of integrated processes involved in teachers functioning as reflective decision-makers and what landmarks exist to guide our work as teacher educators who strive to enhance teacher reflection in our program participants.

STUDENT TEACHER SELF-ASSESSMENT AS A VEHICLE FOR REFLECTIVITY

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Reflection on the part of the student begins with reflection on the part of the teacher. Teachers cannot teach what they don't know and teachers are unable to provide a reflective environment if they have not experienced such an environment themselves. The starting point for most teachers is their preservice teacher education program. An inquiry-oriented teacher education program must model its goal of reflectivity and provide ample opportunities for students to reflect on what they are learning and the information, idea, concepts skills, strategies, and experiences they are encountering.

One of the goals of an inquiry-oriented teacher education program is to encourage student teachers to develop a critical and self-analytic perspective towards teaching (Tom, 1985; Zeichner, 1983). Few teacher education programs, however, prepare their student teachers to become more self-analytic or reflective because they limit the opportunities for students to gather their own sources of valid and accurate information upon which they can reflect.

It is difficult for student teachers to become reflective when they are unaware of their effectiveness during student teaching and often lack information about the nature of their interactions with individual students. Student teacher self-perceptions about teaching effectiveness are generally incongruent with their academic or field supervisor (Wheeler & Knoop, 1982; Briggs, Richardson, & Sefzik, 1986) and with their students (Waxman & Duschl, 1987).

Specific approaches such as collaborative conferencing (Hoover & O'Shea, 1987), reflective peer group teaching (Cruckshank, 1987), reflective teaching lessons (Korthagen, 1985), situational teaching experiences (Cohn, 1981), and seminars (Hill, 1978) have been designed to encourage preservice teachers to think critically about their instruction. These methods, however, only provide external sources of information to the student teaching about their teaching. Reflection about teaching requires more than their teaching. Reflection about teaching requires more than information originating from others; it necessitates the ability to be introspective and to be able to generate one's own sources of information.

A dilemma facing teacher education programs is the need to balance the immediate short-term skills necessary to function in most classroom situations with the opportunity to be reflective about the total teaching-learning process. Many students who enter their teacher education programs are poorly prepared for the transition from passive to active learner which is an integral pat of being a reflective teacher. Years of being a passive listener in high school and through most of their liberal arts college education presents serious problems to teacher educators who want their prospective teachers to take an active role in their own education.

Starting with the learner

Beginning students are concerned about themselves as teachers and their ability to teach effectively, particularly in the areas of classroom management and discipline. There are specific skills that a teacher can learn which will assist in managing the classroom (Doyle, 1986). Without meeting these basic needs, students may be less receptive to other modes of learning and teaching that seem less familiar and immediate to the problems of teaching. One possible vehicle for making the transition from receiver of information to

active participant is the use of specific data about their own teaching upon which they can reflect. Providing for original data sources about a student teacher's instruction will enable the student to focus on their own concerns and provide a vehicle for reflection.

Self-Assessment

Studies have found that self-assessment procedures enhance the teacher's ability and willingness to be reflective about classroom instruction (Koziol, Bohn, & Moss, 1983; Koziol & Burns, 1986; Freiberg, Waxman, & Houston, 1987). The key to effective self-assessment, however, is the ability to provide an accurate and valid tool for preservice teachers to measure their teaching. One such tool used to provide accurate self-assessment data is for student teachers to audio-tape their classrooms. Once the class is taped the students can analyze using the Low Inference Self- Assessment Measure (Freiberg, 1987) six areas of teacher/student interaction. The low inference title reflects the ability of the people who listen to the same tape and reach common agreement on the six categories. The LISAM enables the neophyte teacher to systematically analyze the types of interactions in the classroom and reflect on the relationship between this interaction and effective teaching.

Elementary and secondary student teachers have used the LISAM and Hoover and Carroll (1987) also found that the use of audio-tapes and self-assessment helped classroom teachers improve their elementary reading instruction. Reactions to analyzing their teaching has been very positive. Consistently, the student teachers express relief at "knowing how well they are doing" and amazement at how their perceptions are different from reality. The following is an excerpt from the self-analysis of one student teacher. The student teacher was teaching a lesson on listening skills to students in a high school English class. He had a reflective view of both his closure (#3) of the 50 minute lesson and the lost opportunities for using student ideas (#6).

> #3 - Closure - Closure for Part One should have been done more to focus on the purposes and learning possibilities of the activities which followed. Closure for Part Two was, again, too brief; it provided an adequate transition into the next phase of the lesson, but did not elaborate on the important points covered in Part One. In summary, not enough time (about 3 minutes) was allowed for this final closure. I did stress the importance of concentration to effective listening, and used the examples of the tales as cases in point; however, I did not have time to extend the outcomes of this lesson forward into the lessons to follow.
> #6 - Student Ideas - Here is where I bombed out; this lesson afforded many opportunities that went unexploited. The students were highly motivated to discuss the listening activities, and I did not capitalize on this motivation; I should have used their comments to extend those "teachable moments"; doing so would have helped compensate for lack of closure.

The use of LISAM audio-tape procedures provides another important means of increasing the opportunity for feedback and self-awareness during student teaching.

Conclusion

This approach can help preservice teachers become aware of their own interaction in the classroom. This self-awareness or self-initiated awareness (Walberg & Moos, 1980) increases teachers' control of their actions and the probability that they will enact change. The use of systematic data sources adds a dimension which is absent from most other self-assessment systems and would be a valuable link in supporting reflectivity in student teaching.

DEVELOPMENT OF REFLECTIVE THINKING SKILLS ABOUT PEDAGOGY DURING A FIFTEEN MONTH INTERN PROGRAM

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Educational reformers increasingly are calling for teacher preparation programs to produce "reflective teachers" and the term "reflective teaching" has become prominent in the language of teacher education. Since Cruickshank (1987) has used "reflective teaching" to label a technique which fosters teaching candiates to become students of teaching, we have used "reflective thinking skills about pedagogy" to emphasize the process of becoming a student of teaching. Two research questions were fashioned to determine the progress of secondary level teaching interns in developing reflective thinking skills about teaching during their intern program. These questions provided the foci for this inquiry: (1) To what extent do interns reflect carefully on their teaching throughout their internships? and (2) To what extent do interns communicate with others on their analysis of their own teaching throughout their internships?

Program Description

A 15 month curriculum for post-baccalaureate individuals was developed which emphasized a laboratory approach to teacher preparation where the intern hopefully develops into a thinking, analytical teacher who applies the principles of pedagogy to resolve practical problems in the classroom. Participating school districts play substantial and significant roles in this program. To illustrate, interns are selected through joint screening procedures of the host school districts and the university. Second, during a full academic year interns are responsible for teaching four secondary science or mathematics classes each day and are supported and assisted by school district supervisors and university personnel. Third, interns are employed by the host school district for a period of one academic year at the rate of one-half salary of a beginning teacher in the district. Fourth, assuming all requirements for certification have been met successfully, the host school district and university recommend the intern for teacher certification.

Description of Course Work

During the initial summer of the program (1986), six interns completed course work emphasizing instructional design, classroom management, and instructional resources. Additional experiences in operating classrooms were provided to the interns, such as observations of teaching, interviews with school personnel, and instructional task assistance to teachers. Course work scheduled for the ensuing academic year placed substantial emphasis on classroom practices and theoretical rationales underlying each practice. Research findings on teaching and instruction were integrated into these courses culminating in a planned instructional research project being conducted during the year. Two courses accompanied the teaching internships. During the final summer, two courses of the required core courses in the traditional master's degree program were completed. A one-semester hour seminar permitted continued reflection on problems met and solutions rendered during the internship. A second function of the seminar was to share research findings and to edit the written report of the just-completed instructional investigation. Six additional semester hours, designated as electives, were completed to fulfill the requirements for the M.Ed. degree. Individuals needing three to six more semester hours in a teaching field could use the electives to complete their teaching field. Otherwise, course work from educational psychology or educational technology was suggested to round out the program.

Results

A substantial portion of the courses which accompanied the internship throughout

the academic year sought to foster reflective thinking especially in terms of classroom events. Discussions throughout the fall semester in the practicum methods class centered on past events in class, but the level of thinking rarely moved beyond reporting what had occurred and observations on how to handle a situation should it reoccur. Efforts to link these events with organizational theory, school context, teacher effectiveness literature and teacher decision-making literature were not successful, because it appeared the interns were so involved with their instructional responsibilities and learning the operational roles of a teacher, they had precious little time to be reflective about behaviors as teachers. Only when the interns viewed video tape episodes of their own teaching in class and were challenged to explain what they were doing in terms of the instructional and management principles encountered during summer school was there any discussion which could be described as "reflective".

In the course accompanying the second semester of the professional internship, the focus changed. Multiple topics including metacognition, problem solving and epistemology provided the perspectives for examining classroom experiences. The interns enjoyed the problem-solving activities but did not attempt to implement them into their instructional plans. As the course moved into the study of different epistemologies the interns were finally ready or forced to be ready to reflect on the nature of the knowledge they were teaching and how it should be organized to facilitate learning in their classes. This occurred in April, eight months into the professional internship. Again, due to the demands of their internships, most individuals were under-prepared for class sessions and complained of the difficulty of the assigned readings. Given this context, the course instructor did not expect quality responses to the following mid-term examination questions: (1) In what sense is the knowledge embodied in the sciences rationally justified? Answer this question after considering two related concepts (logical positivism and relativism). In addition, provide your own judgement of your epistemology as it relates to this question (expected length 6-8 pages) and (2) While practical knowledge (Sternberg and Coruso) and interpersonal knowledge (Berscheld) are not emphasized in the elementary and secondary curricula, justification for their inclusion is made in the text. Your task in this question is to do what the objective denotes. Compare the characteristics of these two types of knowledge, then suggest whether it is feasible to make room in the present curriculum for practical and interpersonal knowledge (expected length 6-8 pages).

The quality of the responses was much higher than expected. The interns' responses reflected different styles of expression, but remarkable consistency regarding their collective view of the nature of knowledge (relative positivism) and its influence on their teaching of science. In the response segments to this essay requesting a comparison of interpersonal knowledge with practical knowledge, the interns revealed some appreciation for the value of practical and interpersonal knowledge and noted the limitations of existing schools in meeting the goals of curricula based on these tenets.

As noted previously, the interns were responsible for conducting an investigation during their internship. Their written and verbal reports of the investigations did link their findings to the extant literature and theoretical rationales associated with their instructional treatments.

Conclusions

These initial attempts at "reflective teaching" may appear very superficial and narrow to the veteran teacher, but from our experience with the interns throughout the past year, these responses represent a truly significant change in their orientation to teaching. Until the latter stages, the interns appeared to be interested only in classroom survival techniques; their responses on these essay items and research reports, however, revealed some intellectual synthesis of pedagogical concepts with their instructional roles as caring, thinking teachers. The reduction of hours and the development of abbreviated curricula in both regular and alternative teacher preparation programs is prevalent among teacher education reform movements. Yet the possibility of producing reflective teachers within constricted preparation programs is remote given the preliminary findings from the interns in this study.

STRATEGIC SENSE: THE KEY TO REFLECTIVE LEADERSHIP IN SCHOOL PRINCIPALS

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The concepts of reflection and reflective teaching have emerged as central foci of research on teaching. Increasing attention is being given to the development of reflection in teachers, especially in pre-service teacher education programs. Although it has not been a central emphasis for research or training in other educational roles, clearly the phenomenon occurs, in some form, with school principals, district office staff developers, school superintendents, teacher education faculty and yes, administrators in higher education. The role group that is the focus in this paper is the principal.

There are parallel findings in recent studies in the United States, Belgium and Australia about the intervention behaviors of school principals. Their actions as leaders have been documented and descriptions have been developed of particular leadership "styles" that in key ways closely parallel the descriptions of reflective teachers. Some principals closely examine their roles as instructional leaders, critique their intervention behaviors and assess their actions in ways that are very consistent with the descriptions of teachers processing their own teaching.

Out of the extensive field notes and interviews of principals and their teachers we have developed descriptions of some different ways principals approach their leadership role and think about what they are doing. The thrust of much of the research has been upon examining the role of the school principal in facilitating teachers' use of educational innovations, which has led to the concept of *Change Facilitator Style*. Three Change Facilitator Styles (Initiator, Manager and Responder) have been described in detail and found to be closely related to teacher success in implementing educational innovations (Hall, Rutherford, Hord, & Huling-Austin, 1984). The work suggests a different criteria for judging principal effectiveness i.e., teacher implementation success rather than student achievement.

A key characteristic that distinguishes more effective principals from less effective principals has been named *Strategic Sense*. More effective principals think differently about their role and they define their role in special ways. There are direct linkages between their analyses of their day-to-day interventions and their thoughts about long-term goals and visions. There is a dynamic ongoing self-examining of their facilitating activities that sets them apart from more typical and less effective principals.

Emergence of the Concept of Strategic Sense

A key feature of the designs in our studies of principals as change facilitators has been maintaining constant touch with the study principals. The work has entailed in-depth year long studies of school principals as they have been involved in facilitating change and school improvement efforts. A combination of on site observations and interviews and biweekly telephone interviews were used to identify and document principal interventions. In these types of studies, there are many formal and informal opportunities to develop impressions and descriptions that go beyond the primary study mission of collecting descriptions of innovation related interventions. In doing this field work, it has become increasingly apparent that Initiator style principals think about their role in very different ways than do Manager and Responder style principals.

It appears that Responder style principals are primarily attuned to the moment-to-moment and day-to-day events within their school. While the Initiator style principals are fully cognizant of the day-to-day events they keep fully in mind the long-term vision and

goals they have for the school. A part of their longer term image is the ideal state that the principal and staff are striving towards. This dynamic is part of the often heard description of principals of effective schools when there is discussion of their having a vision and "visioning". This type of longer term imaging and maintaining of a targeted direction has not been observed with Responder style principals.

Manager style principals seem to hold more of a middle level picture and image that can best be described as task oriented and tactical in nature. There also is a tendency on the part of Manager style principals to become preoccupied with, and at the same time satisfied with, accomplishing administrative and organizational tasks with dispatch and efficiency. Initiator style principal see these as a means to a greater end, rather than the end in and of themselves.

The Responder style principal, on the other hand, appears to be consumed in attending to the moment through persistent monitoring of the perceptions and feelings of staff, community and central office personnel. They do not have time, or take time, to develop and sustain a longer term image. They focus on those issues and items that are at hand.

This set of observations and related inferences has led to our proposing the concept of *Strategic Sense* (Hall, 1988; Vandenberghe, 1988) to describe the dynamic imaging and pro-active planning that we have regularly observed in Initiator style principals. There is a continual "noodling around" that is observed and heard with these principals. In the midst of our interviews and discussions with Initiator style principals, they report on their thinking about recent intervention actions, such as a conversation with a teacher. They critique their actions in terms of how went, what should have been done, what was accomplished and what they should do next.

They keep in mind the long-term view and its relationship to the monthly, weekly, and daily activities of themselves and their school. There is a linking of thought about actions and a linking of actions with the Initiator style principal. They chain together their interventions in a deliberate and knowing way. As a consequence the individual conversations, sending of memos, telephone calls, etc., add up into tactics and ultimately strategies for accomplishing the longer term goals. A part of this thinking, or "reflection", is a self examination of the rightness, wrongness, and appropriateness of what they are doing.

Strategic Sense Defined

In our present research, Roland Vandenberghe of Belgium and I are developing a measure for assessing the Change Facilitator Style of school principals. We are conducting concurrent cross-culture studies (Hall, 1988; Vandenberghe, 1988). The measure is designed for teachers to complete and is based on a three dimensional framework for describing the different Change Facilitator Styles that principals can have. One of these dimensions is the dimension of *Strategic Sense*. The formal definition of the concept of Strategic Sense is presented in Figure 1.

The concept of *Strategic Sense* as a dimension runs along a bipolar continuum that ranges from having a "day-to-day" focus to a "vision and planning" focus. It is being hypothesized that a principal using the Responder style will weight toward the day-to-day end and the Initiator style more toward the vision and planning end.

Although there has been discussion on the parts of many, especially the contingency based leadership theorist, that a leader can change his/her style, (Fiedler, 1967; Hersey & Blanchard, 1982), it is our hunch, at this time, that the Change Facilitator Style of the school principal does not change that easily. However, we will be able to put this to the empirical test in the next year or so as the *Change Facilitator Style* measure takes shape.

For our purposes here, the working definition of Strategic Sense with its bipolar scaling underlines the framework for the development of the CFS questionnaire. It also provides the schema for analyzing the reflective dynamic we are observing in principals. It appears that the idea of *Strategic Sense* and the way that this is carried out in the Initiator style principals is consistent with the definitions of reflection that are being identified with teachers.

Figure 1. Working Definition of Strategic Sense

DIMENSION III. *STRATEGIC SENSE*

To varying degrees principals keep in mind an image of the long term view and its relationship to the monthly, weekly, and daily activities of themselves and their school. Some principals are more "now" focused, while others think and act with a vivid mental image of how todays actions contribute to accomplishing long term goals. Some are reflective about what they are doing and how all of their activity can add up, while others focus on the moment to moment, treating each event in isolation from its part in the grand scheme. This visioning encompasses the entry and role of external facilitators too. In some settings external facilitators can enter schools as they wish, while in other settings the principal encourages/discourage their entry and prescribes their role.

Day to Day

At this end of the dimension there is little anticipation of future developments and needs or possible successes/failures. Interventions are made in response to issues and needs as they arise. Knowledge of the details of use of the innovation is limited and the amount of intervening is restricted to responding to questions and gradually completing routine steps. Images of how things could be better and how more rapid movement could be made to gain these ends are incomplete, limited in scope and lack imagination. Structures and solutions are devised "on the spot" as needs arise. These are done with little adjustment or anticipation of longer term patterns, trends, or consequences. External facilitators come and go as they wish and spend extraordinary effort in advising the principal.

Vision and Planning

The orientation of this pole is that of having a long term vision that is integrated with an understanding of how the day to day activities are the means that accumulate toward the desired end. There is an intensity to the facilitating activity, with a high degree of interaction that is related to the work at hand. Teachers and others are pushed to accomplish all that they can. Assertive leadership, continual monitoring, commitment to action, and creative interpretations of policy and uses of resources to accomplish longer term goals are clear indicators of this end of the dimension. Also present is the ability to anticipate the possible systemic effects of interventions and the longer term consequences of day to day actions. Effects are accurately predicted and interventions are made in anticipation of likely trends.

Interactions with staff and external facilitators are centered on the work at hand. The focus is on tasks, accomplishing school objectives and making continued progress. External facilitators are encouraged/discouraged to be involved in the school according to the principal's perception of their areas of expertise and worth.

REFLECTIVITY: THE EDSEL OF EDUCATION?

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Ms. McKenna has been teaching social studies at Poe High School for ten years. She holds a B.A. in History and Political Science and a M.A. in Education. Today, she was denied professional leave to attend the annual conference of the state social studies council because "you don't need to go galivanting around the state when you're supposed to bring up the test scores of those kids."

Last month, she had a run-in with the principal after she refused to monitor the cafeteria during lunch. Although a duty-free lunch has been guaranteed by district policies for ten years, the principal has routinely posted duty rosters. Ms. McKenna explained, in a letter to him, that she needed the time at lunch, to "just be alone for a few minutes and think."

Last year, as part of her annual unit on "Campaigns and Elections," Ms. McKenna asked her twelfth grade government students to spend three hours working with any candidate's or referendum campaign. One parent called the school board to complain the assignment was biased; in addition, it put too much pressure on her son who worked nights at a local fast-food restaurant. Ms. McKenna was told that "participation assignments are not an appropriate part of this school's curriculum in social studies."

Scenarios like this are all too common in the everyday lives of teachers. The daily routines of school are often based on a need to keep order, turn out a product, and buttress all decisions with layers of paperwork and policy references. Are these the conditions conducive to reflective inquiry and action? Does the paradigm of the reflective teacher mesh well with the current values of society and the demands society puts upon the schools? Is the doctrine of "accountability" as currently practiced compatible with reflective teaching?

In recent years, various paradigms, models, and descriptions of successful teaching have been promoted. Research has provided a basis for determining the ingredients of "an effective teacher." Schools of education are in the midst of massive retooling. Merit pay and beginning teacher competency programs are moving forward. What does it all mean?

Teaching can be viewed as a hierarchy of three levels. The first and least complex level is based on a metaphor of production. Teachers practicing on this level are capable of technical rationality (Van Manen), routine action (Dewey), execution (Tom), technical competence (Zeichner) or information processing (Moore, Mintz, and Biermann). The philosophical underpinnings of this level are found in the positivist-empirical world view. It is at this level that the teacher conducts the bulk of his/her time interacting with students.

The second and more complex level of teaching might be called the decision-making level. Mirroring a metaphor of choice, is one characterized by practical action (Van Manen), reflective action (Dewey), educational worth (Zeichner), and disciplined inquiry (Moore, Mintz, and Biermann). Teachers practicing at this level would also possess level one skills but also be capable of appropriate, consistent, and defensible decision-making. It arises from the hermeneutic-phenomenological tradition. Teachers at this level would choose their classroom actions after evaluating several possible alternatives.

The most complex level, based on a metaphor of liberation, stresses critical reflection (Van Manen), reflective thought (Dewey), moral and ethical dimensions (Zeichner), reflective practice (Schon) and reflective inquiry (Moore, Mintz, and Biermann). It requires keen observation and reasoned analysis since it flows from a critical-dialectical philosophical base. Teachers at this level would weigh the implications of each problem and solution before taking action.

Although perspectives, definitions, and emphases vary in a discussion of reflection, two realms of reflectivity emerge: the microcosmic (and often independent and isolated) world of the classroom and the spiraling macrocosmic world of the school within its varied communities. Within the microcosmic world, the reflective teacher can attempt to promote self-directed growth, create opportunities for him/herself and students to examine moral and ethical dilemmas, assume ownership for conflicts and problems that reflective teaching may cause, and assume a responsible, critical and all-embracing view of the art and science of teaching. The reflective teacher would have a fairly wide repertoire and would employ a number of strategies depending on the needs of students and materials. The reflective teacher may view classroom teaching as problematic and often employ inquiry-oriented strategies and activities.

Within the macrocosmic world of teaching, the reflective teacher would have to define boundaries of influence, recognize political, budgetary, and institutional restrictions, and accept the consequences of actions that might upset the status quo. The reflective teacher would be able to identify and attempt to remedy inconsistencies among philosophy, research and practice. The reflective teacher might provide leadership or promote curriculum goals which could challenge the prevailing values of the community but are consistent with personal philosophies and professional knowledge.

In both spheres, the reflective teacher could be identified as Tom's "moral craftsperson" or Kohl's "political craftsperson." In either sphere, the teacher would exhibit self-reliance and confidence in individuals. Reflection, with its metaphor of liberation, predicates a widening scope of choices, decisions, actions, and creations.

If educators, universities, and teacher education programs jump on a bandwagon of reflective teaching, what will be the result? Models and programs cannot be advocated within a vacuum. Do the conditions and values of today's schools foster reflective teaching and reward the reflective practitioner? Can the process of reflective thinking be compatible with the products demanded by the public?

Clearly, "accountability" is the current buzzword in education--every person and every institution must meet certain standards of performance. Accountability, as currently practiced, serves generally to restrict reflective teachers in making intramural decisions and prevent them from becoming full partners in the making of educational policy.

Can a reflective teacher like Ms. McKenna be accepted on her own terms by the educational establishment? Do we really want "empowered teachers," who comprehend reflective teaching and act on their knowledge and skill? Are reflective administrators an essential ingredient? Are we at all levels willing to engage in ethical discourse with empowered teachers?

As we increase the technical, decision-making, and reflective skills of teachers, will the conditions and institutions of education be willing to embrace them? Can the individual gradually be empowered within the school's culture to achieve seniority and status? Will schools nurture reflectivity? Is there really a place for a teacher who understands and questions the political, ethical and social implications of education today? Or is the paradigm of the reflective teacher destined to become the Edsel of education?

THE POTENTIAL OF REFLECTIVE PRACTICE: RAINBOW OR REALITY?

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When one examines what the authors in this volume and others have written, as well as reflects on the lively discussions at the conference from which this publication grew, it is possible top have at least two, almost opposite reactions. Pessimists might think of the reflective practice as the latest educational "rainbow", beautiful, alluring and aesthetically pleasing but destined to fade quickly, leaving us with a warm feeling for having been a part of the experience but with in lasting effects, the promise to the pot of the gold at rainbow's end eternally remaining beyond our grasp. An optimist could see the concepts and approaches espoused as a transformational and enduring reality, absolutely essential to improved teaching and learning, providing a wide bridge connecting theory, knowledge and action, to be travelled daily by newly empowered education professionals and students alike.

Whether either of these scenarios or something in between comes to be will be dependent largely on how well the concepts and processes of reflective practice are clearly defined and justified, judiciously implemented, and rigorously evaluated. Advocates of reflective practice must realize that in order to convince practitioners and policymakers of its general worth, the burden of proof is on advocates to show that reflective practice is theoretically sound, feasible, and more effective than present practices in producing desired outcomes. Given the nascent state of the art of reflective practice depicted in this volume and elsewhere, let's take a look at what we do and don't have and where we might go from here.

What We Have

Clearly there is not total agreement on what comprises reflective practice. Even the descriptor "reflective practice" which I have chosen to use is an amalgam of others' choices of "reflective teaching", "reflection", etc. Reflective practice may be most apt because it conveys major and powerful points about which there is consensus, thus providing a basic design which can be theoretically justified and tied to a strong improvement orientation. The basic characteristics described below should reassure practitioners and policymakers that, despite variations on the theme, reflective practice is a well-conceived, pragmatic and systematic strategy worthy of examination as we try to respond to the nationwide clarion call for a major restructuring of American education.

Reflective practice denotes the need to address and relate thought and action. It expresses the need for both *reasoned vision* and *meaningful strategies* in pursuing improvements. Reasoned vision recognizes the essential nature of appropriate knowledge, skills and excellence in education. But it also recognizes that these must be complemented with the ability to construct a specific normative vision of what is desirable and feasible. To do this requires not only a sophisticated understanding of what is but the constant use of inductive as well as dedective reasoning and extrapolation as well as intrapolation in creating images of what could and should be. reasoned vision demands that we consider future ideals as well as present realities. Meaningful strategies are not isolated actions but careful coordinated and independent tactics designed to achieve important and specific objectives and goals highly valued by participants. The pairing of vision and strategies also reminds us that reflective practice must include an appropriate philosophical stance and parallel attitudes and beliefs as well as actual process for learning and improving.

While individuals can and must be introspective, responsible and rigorous in order to

contribute, the highest potential of reflective practice can be realized only through the collegial efforts of the various school communities. The enormous demands of truly reflective practice necessitate the wise use of all the abilities and commitment available. Each individual and each role group (teachers, students, administrators, parents, community leaders, etc.) must support and challenge the others to ensure that the raison d' etre of reflective practice is to push the frontiers of educational excellence ever forward, not just to maintain competence or the status quo. The goal is to have a holistic effect that respects and incorporates but goes beyond the additive contribution of individual participants.

Collegiality is also essential because reflective practice must go beyond expert knowledge, technical skills and effective behaviors. These must be placed within the context of the school communities' views with regard to normative factors such as values, character, morality, culture, equity, ethics, justice, responsibility and politics. This necessitates understanding present norms and getting the communities' to construct future visions and standards relative to these factors. Developing reflective practices without considering the school communities' standard and beliefs in these areas would be analogous to submitting an architectural design to a community planning board without considering the buildings contribution to the community, the needs and expectations of its future occupants, and the architectural traditions and standards of that community. No matter how technically sound the building, chances for approval would be virtually nil.

What We Don't Have

Perhaps the single most glaring omission from the writing is adequate and explicit attention to the ultimate end of reflective practice: maximum learning and development by students in our schools. Most, although not all, discussions are focused on teacher development and professionalism as though those were ends in themselves. But schools exist to educate and help students, not teachers. While these are obviously not mutually exclusive, those in favor of reflective practice need to be much more specific about how students' skills in and love of learning, as well as their development as persons and citizens, will be enhanced by changes throughout the teaching and teacher education systems.

There are several ways to do this. First, responsiveness to the national clamor for both better basic and higher order thinking skills is important. Is not the heart of reflective practice insistence on highly development knowledge, skills and behaviors couched in terms of understanding the conditions, norms and values around us and how to successfully integrate the two? School and classroom strategies derived from these tenets must convey a strong message of similar expectations for students.

Second, there are many virtuous characteristics of reflective practice, now cast in terms of benefits to adults, that would be equally powerful if moved one step further to desired student characteristics. Reflective practice is proactive paired with collegial cooperation rather than individual isolation and competition, demands expansion of expectations and learning rather than adjustment, views our circumstances as malleable and alterable rather than rigid and prescribed, and pushes us to strive to improve, to avoid complacency and to develop higher conceptual levels of understanding about our conditions and how they can be improved.

Finally, the above will simply be rhetoric unless ways are found to involve and empower students in their own learning in the same fashion that reflective practice demands that of education professionals and others. The nature of reflective practice is not to impart knowledge and practice from some oracle but to have it socially and holistically constructed by those who will use it. That unwavering principal must be carried through to the practice of the classroom. It also means that we need to focus on teacher education, teaching, schooling and other factors of influence in a coordinated and collaborative fashion rather

than isolating one factor such as teacher education. The "design" for reflective practice must address all of these comprehensively, even if building toward the vision will need to be done in stages as opportunities and resources allow.

Where Do We Go From Here?

Virtually all efforts at the kind of reflective practice described above are in embryonic stages of development vis a vis their eventual intend scope and impact. While there are a wide variety of approaches being taken, a common set of generic steps that all could follow is suggested here. Its intent is to make sure that developers ask themselves important questions and provide answers for themselves and others, particularly policymakers, which will allow good judgements to be made about the potential and limitation of reflective practice.

1. **Conceptualization** - From the macro world of context to the micro world of instructional behaviors, the theoretical and "practical wisdom" foundations and how they suggest and support proposed changes and improvements must be clearly understood. Reflective practices in the form of reasoned vision and meaningful strategies serve as designs and tools, respectively, to build the bridges between theory and practice.
2. **Definition** - Even though different definitions will be needed for different forms and objectives of reflective practice, a common language with commonly understood meaning is crucial. Definitions of purpose, strategies and desired outcomes must be clear, explicit and public.
3. **Realization** - Needs in terms of time, human and financial resources, organizational and structural conditions, etc. must be specified and met. Design must be judiciously implemented, subject to on course adjustments as conditions, outcomes and/or opportunities change.
4. **Nuturing** - Collegial interactions, challenges and support are essential to success. School communities are crucial not only for making things happen but for being vigilant in redefining or enlarging the vision as is necessary and possible.
5. **Understanding** - Monitoring and evaluation must achieve new heights. There must be rich documentation and thoughtful analyses from many perspectives to determine why choices are made, what actions evolve and how they are implemented, what outcomes result, and what implications can be drawn for future choices.

In short, whatever is developed must be theoretically sound, conceptually focused, improvement oriented, contextually framed, judiciously enacted, collegially supported and carefully studies. Ultimately, reflective practices must produce outcomes that are empirically, theoretically and/or scientifically defensible in terms of student learning and development and the means employed to achieve them.

Summary

In addition to the points addressed, there are many other strengths (e.g., interdisciplinary opportunities, experimentation with accountability) and weaknesses (e.g., existing bureaucratic constraints, inappropriate criteria and tools for evaluation) of reflective practice which deserve considerable attention not possible here given space limitations. The enormity of the possibilities and the potential problems can easily cause one to vacillate between anticipation and apprehension. If we are to be able to make informed judgements about whether reflective practice is to be a rainbow or a reality, the rigor, clarity, flexibility, collegiality, perserverance and accountability must be our watchwords. There is no inherent goodness in or right to reflective practice: its future in education will be determined by our success or failure in constructing viable and productive approaches and justifying their worth to the school communities which they serve.

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